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An Address
ON
THE GROWTH OF CANCER.

Delivered in opening a Discussion on Cancer before the Medical Society of London on March 13th, and before the Medico-Chirurgical Society of Glasgow on March 24th, 1905.

By E. F. BASHFORD, M.D. Edin.,
GENERAL SUPERINTENDENT OF RESEARCH AND DIRECTOR OF THE LABORATORY OF THE IMPERIAL CANCER RESEARCH FUND.

Past Neglect to Investigate how Cancer Grows.

Mr. President and Gentlemen,—I propose to refer more especially to the growth of cancer. The study of the mere processes of growth as distinct from the genesis of cancer has received serious attention from the outset of our investigations and it will be entirely advantageous if others can be persuaded that an attack on this difficult subject can no longer be avoided, as it has been in the past. The undefined amount of the growth of cancer—which term I take to be synonymous with "malignant new growth"—has forced it to the forefront in the course of the experimental investigations of the Imperial Cancer Research Fund. The biological problem presented by the amount of growth has not hitherto been properly appreciated, even by those investigators who, like Jensen, Borrel, and Michaelis, have successfully propagated carcinomata. In the study of cancer in man, the other clinical and pathological features mask those of mere growth. By means of artificial propagation we have produced such enormous masses of tissue that the ceaseless cell proliferation has become the most impressive feature, and as the work has progressed the local nature, the infiltrative character, the absence of constitutional disturbance, the relative independence, and the formation of metastases have assumed a different perspective. That the amount of growth which suffices to kill a patient is infinitesimal as compared with the indeterminate total of growth as revealed by experimental propagation is a side issue, however important it may be. *The* problem which demands solution is, Why is the growth of cancer limitless? This concrete and hitherto unknown problem is thrust upon us by artificial propagation, which also provides us with a means for experimentally solving it.

It can hardly be claimed that the necessity for comprehending the nature of this undefined growth has been elevated to prime importance in the past; for it has not been made the starting point of any one of the hypotheses which have been advanced from time to time to explain cancer. Examination of the hypotheses which merit serious attention shows that they have all taken their beginning in conjecturing a nature and an origin and the ceaseless growth has been relegated to the position of a phenomenon the explanation of which naturally followed from the nature and origin postulated. The cells of a malignant new growth have been supposed to proliferate because, e.g., they were asserted to be freed from the restraint of connective tissue or liberated from the control of the other members of the cell community by "solution of organic continuity," or because they were derived from "embryonic rests," or were modified reproductive "gametoid" (reduced) tissue, or because a parasite made them multiply. I do not wish to ridicule any one of these hypotheses. I desire, however, to make clear the nature of the assumptions which have been supposed to explain the growth of cancer and to emphasise that all these explanations have one shortcoming in common: they postulate a mode of origin and a nature for cancer and fail to show how the actual continued cell multiplication is maintained. The mere processes of growth have not been deemed worthy of higher consideration in formulating any of the above-mentioned hypotheses. Von Leyden, a most distinguished clinician, in a recent paper upholding the parasitic hypothesis, quotes von Hansemann, a distinguished pathologist and a critic of the grounds on which the belief in a parasitic etiology is based, and reproaches him for confessing his ignorance of how and why cancer cells possess their unlimited powers of growth and for excusing himself both from attacking this problem and from attempting to explain the origin and the nature of cancer. It cannot therefore be asserted that the importance of the subject is denied.

It seems strange that if the power of continued proliferation is so prominent a characteristic so little attention should have been given to it by Thiersch, Waldeyer, and Cohnheim, who so materially advanced our knowledge of malignant new growths. The explanation is the simple one that the processes of cell division were little understood by the older investigators who had also little information on fertilisation and on the development and differentiation of organisms to guide them in studying the normal growth of the human body, and far less still to help them to comprehend growth in the aberrant form presented by cancer.

Even in recent times pathologists have continued to concern themselves with the mode of origin and the nature rather than with the growth of cancer. This has been partly due to the continued discussion of the evidence for and against the views already enumerated, and the legacy of restricted outlook which has been transmitted to all investigations carried out under their influence. It has also been due to endeavours to find better substitutes for the old hypotheses, but always on the basis of experience limited to cancer in man; for the only important contributions to the discussions on the nature of cancer have been provided by medical men or biologists who have studied malignant new growths in the form in which they come under observation in the operating and post-mortem theatres. Thus studied cancer is almost always already fully developed. The stage at which it has arrived is alone presented for examination. The stages through which a tumour has passed, and those through which it will pass, are alike left to the imagination and are supplied in accordance with any hypotheses which may find favour. The limits of objective observation do not extend beyond the stage at which a tumour has arrived and it has been truly said that even the margins of a fully developed and growing cancer yield no information as to its origin. In this connexion, however, it is important to remember that the histological features, especially the direction in which the cells tend to differentiate, are strong arguments in favour of the view that malignant new growths develop from cells of the normal tissues. These arguments grow in force when regarded objectively and free from the bias of the Cohnheim hypothesis which postulates an embryonic and atypical character for the cells of malignant tumours. Deviations from the typical character of the cells of the tissue "mimicked" are frequent. They are, however, of much less importance from the standpoint of investigation than the universal occurrence of a single differentiation when any is present and the occasional manifestation of all the features of malignancy by growths which show the most perfect differentiation and even exhibit the exercise of the secretory function of the tissue represented.

Investigation of cancer in man is so limited in its scope that it is not surprising if general credence has been given to the belief that it will be impossible ever to observe a cancer in process of formation and pathologists have in consequence remained content to modify the old explanations or to postulate anew other modes of origin whenever a previous conjecture has been shown to be untenable. All that could be ascertained by the study of human cancer appeared to have been elicited, new facts were not forthcoming, and new explanations of the old facts did not have even the appearance of an advance. Is it surprising that pessimistic views obtained ascendance and that medical men only cognisant of the seemingly insuperable difficulties presented by the study of cancer in man should declare that its nature can only be elucidated with the explanation of life itself? The method has been at fault. The investigator has been poking about in a corner and the narrow scope of his inquiries has prevented him from forming a true conception of the problems and from making at the outset even a preliminary survey of the general features of the field of investigation. The study of cancer has been pursued not in a rational way but empirically and the pessimism which has resulted from failure is logically ascribed to the methods which have been employed and not at present to the insoluble nature of the problem itself.

FEATURES OF SPORADIC GROWTH.

The first essentials to the rational study of cancer are facilities for subjecting any hypothesis to the test of experiment and freedom from the restrictions which circumscribe its study in man. Hence it came to be one of the first duties of the Imperial Cancer Research Fund to determine the extent to which malignant new growths occur throughout the animal kingdom. These investigations, augmented by the results of other workers, have shown that if allowance be made for the differences in anatomical structure of the various animals the problems of cancer present the same essential characteristics throughout the entire vertebrate phylum. This identity in nature—which, of course, involves identity in the character of the anatomical lesion upon which the diagnosis of malignant new growth can alone be based—is a matter of prime importance. It yields a secure comparative basis for deduction and puts out of court as direct causative factors many external agencies which demand consideration in the higher forms of life and of necessity attract attention in the case of mankind living under the artificial conditions associated with a high degree of civilisation. The information elicited by studying the growth of cancer in the comparative and experimental manner thus rendered possible must be brought to bear upon the nature of the disease in man and reviewed in the light of the knowledge which has accumulated during many years of clinical and pathological observation. The boundless cell proliferation proceeds with an energy which is only comparable with the initial proliferation in embryonic tissues; nevertheless, it is intimately associated with another main feature of the disease—viz., its increasing relative frequency as life advances. This is technically known as the "age incidence" of cancer and must be explained before any claim to the establishment of the sufficiency of a hypothesis can be set up. All the well-known hypotheses, however, break down before the problem of the "age incidence" of cancer and it does not necessarily follow from the primary assumptions which underlie any one of them. The comparative study of sporadic malignant new growths has proved that they occur in animals also with increasing frequency as age advances, both in species with a long and with a short duration of life. They appear in considerable numbers in mankind after from 45 to 50 years, in the horse after nine years, in the dog and cat after nine years, in the trout after from five to seven years, and in the mouse after two years. The higher incidence manifests itself after an interval which varies in different species in direct relation to the absolute duration of life. The interval of relative freedom is in consequence proportionately much the same for different animals. The maximum incidence also coincides with the decline in reproductive activity. This fact has given rise to speculation on the influence of the sexual organs. These speculations are deprived of any significance by the fact that cancer occurs in castrated animals at the same period as in entire animals. Neither the cessation of a normal secretion nor the appearance of an abnormal one can therefore be the cause of the maximum incidence of cancer at this time. The variations in the natural sporadic growth of cancer in different forms of life therefore yield some valuable information and are of sufficient importance to claim further study.

The preliminary stages before the appearance of cancer, which may take 50 or more years in the case of man, are passed through in about two years in the case of the mouse. It would take so long to observe the various stages of the whole process in mankind that it is impossible to attempt it with hope of the practical results which are theoretically attainable in the case of short-lived animals. The relation which exists between the age incidence of cancer and the duration of life awakens expectations of another kind. There are laws which govern the varied but definite growth, which determine the size of body and the length of life in the different vertebrates. May they have a determining influence not only on the time at which the disease appears sporadically but also set time limits to various phases in the development and growth of cancer itself? Just as the gestation period varies from 21 days to nine months in the case of the mouse and human subjects in accordance with the laws which govern their respective developments, so if there be stages in the growth of cancer they may also be adapted to the compass of life in different animals and be gone through more quickly for the mouse than for man. As mankind and the mouse give evidence in their offspring of how their own growth has originated, is maintained, and declines, so it has seemed rational to look for evidence of a similar kind in the undefined and apparently continuous growth of cancer. This evidence has been most conveniently sought for in short-lived animals and there also most readily interpreted with the assistance of experiments. Such observations are entirely impossible in the case of man and are not always practicable in the case of animals.

NATURE OF ARTIFICIAL PROPAGATION.

Malignant new growths are said to be physiologically and morphologically independent of the needs of the organism primarily affected. This character of relative independence appears in its highest degree in the successful transference of malignant new growths to new hosts. The power of unbounded proliferation is also most clearly demonstrated in these circumstances. I need not pause to contrast the limited proliferation which follows the transplantation of other animal tissues with that of cancer under the same conditions. The artificial propagation of a malignant new growth by transplantation into a new host of the same species, or into a new site in the case of the organism primarily affected, is attended with difficulties which are not easily overcome. A large number of transplantation experiments have been performed in the horse, cow, dog, and cat, all with negative result.[1] In the rat malignant new growths have been transplanted successfully, and in the mouse about a dozen different tumours have been transplanted under the precautions which are necessary to establish the unequivocal nature of the result. In what follows I shall rely mainly upon the details of the experimental observations of the Imperial Cancer Research Fund upon the successful propagation of five different sporadic carcinomata through several generations of mice, and for comparison on the study of the processes which result in the production of large tumours in the case of an infective granuloma of the dog. An unfortunate misconception of the significance of the facts has led to the nature of the experimental propagation of cancer being confounded with that of the infective processes, from which it differs fundamentally. The experimental propagation of a malignant new growth means neither more nor less than the continued proliferation of the cells of one animal in another animal. It may also be practised on the same animal without, however, modifying its significance. The parenchyma cells of the tumours which arise at the new sites are the direct genealogical descendants of those introduced. They are not provided by the host. The process is as remote from being of an infective nature as that responsible for the formation of secondary deposits with which it is strictly comparable. What reaction there is on the part of the host is limited to the supply of the vascular and supporting structures which the parenchyma cells—displaying again their independence—have power to make subservient to their needs. The process of infection is wholly different. The cells of an infective granuloma introduced at the time of inoculation are merely vehicles—living substitutes for the platinum loop—for the conveyance of the infective agent. There are infective granulomatous tumours closely resembling sarcomata of which the causative agent cannot yet be isolated and is not recognisable by any method known to us. In these cases also the process of infection which follows inoculation with portions of the granulomatous tissue is identical with that which occurs after inoculation with isolated pathogenic organisms. The introduced tissue only plays the part of a vehicle. It succumbs and is ultimately absorbed and when new tumours result they are entirely composed of the tissues of the reaction on the part of the host. All the stages in the reaction can be traced from the gradual transformation of the elements of the connective and vascular tissues up to a fully developed tumour identical in structure with that from which the original infection was derived.

In the experimental propagation of cancer the elements of the soil play the insignificant part of subserving the needs of the tumour, of which the essential part is genealogically derived from another animal. By these means a part of one animal, often long dead, is kept alive by what is really an artificial circulation provided by another. In tumours which result from infection the only constituents, apart from the

[1] In the positive cases reported sufficient care has not been taken to exclude the mere inoculation of infective material from various forms of granuloma, and a detailed examination of the successive stages at the site of inoculation has not been carried out.

pathogenic organisms, are the elements of the soil themselves. Any comparison which may be drawn between the two processes is correctly limited to the differences and similarities which may exist between the nature of the reaction of the tissues of the host when pathogenic organisms or cancerous cells are proliferating in their midst. What we mean by disease is, in fact, the reaction of the tissues of the living animal to disturbing agencies of any kind. In infective conditions the reaction may result in the formation of masses of new tissue but in the artificial propagation of cancer the reaction is a very subsidiary phenomenon and the essential process is the continuous independent growth of the introduced parenchyma which constitutes the disturbing agency. The artificial propagation of malignant new growths yields conclusive experimental evidence, in keeping with accumulated clinical experience, that cancer *qua* cancer does not produce specific symptoms of its presence. Malignant new growths have only been successfully transplanted from one animal to another of the same species. The cells of a malignant new growth of one animal are so much out of their element among the tissues and fluids of an animal of another species that they are unable to maintain their vitality. Their fate is probably the same as that of the blood corpuscles of a strange animal when employed in the manner in which transfusion of blood was originally practised in surgery.

General Features of Growth in Artificial Propagation.

I have already drawn attention to some of the comparative features of growth in sporadic tumours and shall now briefly refer to some of the phenomena presented in propagated tumours. An attempt to propagate a tumour requires to be carried out under many precautions. Numerous factors have to be taken into account in interpreting the results of attempts at artificial propagation. Stated generally, the results of transplanting different carcinomata show a gradation from those which yield a uniformly high percentage of successes to those which yield a uniformly low percentage and to others again which have given absolutely negative results. The contrast between the tumours at the top and those at the bottom of the scale, therefore, does not imply distinctions in nature, although it signifies that the respective groups differ in the degrees in which they possess the properties which adapt them to the conditions obtaining in artificial propagation. Those specific qualities of the cells which determine the short or long duration of life of different species of animals appear to play an important part in the experimental establishment of tumours in a new host and, further, there is also much evidence to show not only that the qualities of the cells of different tumours vary in the same species of animal but also that they differ in apparently identical tumours and even in the same tumour at different times. The variations in the percentage of successes and the rate of growth in tumours of the same histological character have clinical bearings upon cancer in man, for they indicate that, in addition to the importance of the site of a primary tumour and the degree of vascularity, amount of movement, and other conditions, which have long been recognised to influence the early or late appearance of metastases (e.g., in the cases of epithelioma of the tongue and the larynx) there is something else of great moment which is inherent—but not always present—in the tumour cells themselves and without which even a suitable soil may remain free from invasion. The surgeon and the pathologist are familiar with the contradictory behaviour of malignant new growths which are reasonably supposed to be identical; how they present variations in malignancy and how with uniform care in operative procedure uniform results are rarely obtained. The inconstancy in the qualities of the cells of the same tumour revealed in the course of our experiments is a contribution to the solution of these apparent contradictions, although it must not be forgotten that we are not yet able to express any definite opinion on the influence of the soil into which tumours are transplanted.

Cellular and Intracellular Phenomena of Growth.

When we turn to consider the more minute processes of growth—the cellular and intracellular phenomena—we find that the cells of carcinoma and sarcoma breed true. In saying that the cells breed true, I mean that any evidence they give of differentiation is in one direction only—that of the primary tumour. In the multiplication of the cells of a tumour there are several varieties of direct (amitotic) and indirect (mitotic) division. The phenomena of indirect division are the more prominent, and different authors have described the various features of the normal bipolar mitosis and several abnormal manifestations of the same process. A not infrequent abnormality is cell division by multipolar mitosis, in which the rods of chromatin are arranged, not on one spindle with two poles, but on several spindles which converge towards a corresponding number of poles. The bipolar and multipolar mitoses as a rule proceed in a way which gives rise to symmetrical figures and distributes equal numbers of the chromatin rods to the nuclei of the daughter cells. However, both the bipolar and the multipolar figures may occasionally appear to be asymmetrical and suggestive of an unequal distribution of the chromatin rods to the different poles. All the chromatin may not enter into the process in other dividing cells, and it is said to be "cast out." The peculiar form of cell division which prepares the reproductive elements for fertilisation has also been described in cancer. This form of cell division presents contrasts to the main features of ordinary bipolar mitosis, from which in the reproductive tissues it is readily distinguished in all its phases. Flemming, therefore, designated it heterotypical. In the reproductive tissues it results in each of the two daughter nuclei receiving exactly half the number of chromatin rods, which an ordinary bipolar mitosis would distribute, and if the daughter cells proliferate the progeny retain the halved number of chromatin rods when in division. The halved number of chromatin rods is only restored to the full number when that fusion of nuclei occurs which is the one constant feature of fertilisation. We have pointed out that the cells which exhibit heterotypical mitoses in cancer differ from cells undergoing this process in the reproductive tissues. The differences extend also to the preparations for division and to the stages which follow it.

The various deviations in cancer from what is looked upon as the normal course of cell division are not exhausted by the above catalogue. There are other irregularities. Many dividing cells possess less than the proper number of chromatin rods, it may be half or less or more than half this number, others have too many. These two groups of nuclei were named respectively hypochromatic and hyperchromatic by von Hansemann. The hyperchromatic nuclei arise by preparation for a cell division which is, however, omitted and perhaps also in other ways. The hypochromatic nuclei may arise by multipolar or by asymmetrical mitoses, by casting out of chromatin, or by the heterotypical mitosis. It is not possible to tell by what method a cancer cell which is dividing has come to possess too few chromosomes, even should they be exactly half as numerous as they ought. There is thus a confused series of normal and abnormal phenomena going on side by side. With one exception all the abnormal phenomena have been shown to occur—although they are less frequent—in the processes of chronic inflammation, in benign tumours and elsewhere; but sufficient time has not yet elapsed to permit of a proper estimate of the significance of the heterotypical mitosis in cancer.[2] We have already stated that it is not a constant feature of malignant new growths; indeed, it may be entirely absent when the anatomical and pathological features of malignancy are present in man, or, on the other hand, be present in the absence of the latter.

All attempts to unravel the confusion of cell division in sporadic tumours have failed to pick out the essential from the negligible phenomena. If our knowledge of how the growth of cancer is maintained is to advance the hitherto unsurmountable difficulties presented by the disorderly phenomena of cell division must be overcome. In artificially propagated tumours the difficulties fortunately give promise of being more easily surmounted. Our long-continued observations on many generations of transplanted tumours have yielded the valuable results that a tumour maintains unaltered its general histological characters under the longest propagation yet attained and also the minute cell characters, including the nature of the differentiation and that constant number of chromosomes which is normal to the tissues of a healthy animal. Cell proliferation proceeds throughout all generations by typical

[2] I protest in the strongest possible terms against the uncritical and imperfect observations which have appeared during the past year with reference to the occurrence of the heterotypical mitosis in malignant new growths, its reputed absence in benign tumours, and alleged occurrence in the Graafian follicle and elsewhere. It is to be hoped that in future the ordinary criteria of objective work will be fulfilled by those approaching this difficult subject.

bipolar mitosis. The various forms of irregular cell division which are such striking features of sporadic tumours do not occur and the process of proliferation becomes orderly. There can be no question of the proliferating cells showing too many or too few chromosomes. A hypochromatic nucleus, even one with exactly half the somatic number of chromosomes, is such a rarity that we have not yet seen one. Yet at recurring intervals, which coincide with the reappearance of other phenomena, the heterotypical mitosis is found distributing half the normal number of chromosomes to the daughter nuclei. Since in all other dividing cells the normal number of chromosomes is retained, it follows that if the heterotypical mitosis is anything more specific for cancer than the other irregularities present in sporadic tumours it must be an essential phase intercalated in the process of growth. Fusion of the daughter nuclei would be necessary to restore the normal number of chromosomes and might be expected to establish powers of proliferation and of relative independence such as follow the nuclear fusions of fertilisation, and to result in behaviour similar to that of an organism of a succeeding generation towards the one which has preceded it. Otherwise the heterotypical mitosis can only be an incident by the way in a continual vegetative proliferation by normal bipolar mitosis. If the first interpretation is correct then the apparently uninterrupted growth may be further analysable. We may then expect it to be a discontinuous process maintained by an orderly series of cell changes and the explanation of the stages through which the cells of fully developed tumours pass in the incessant renewal of proliferation will indicate the nature of the changes which set the growth agoing.

We can form an opinion of the stage at which the heterotypical mitosis will be intercalated in the growth of cancer. In animals and plants this mitosis marks a terminal phase in cell proliferation and ushers in the preparatory stages for the sexual production of a succeeding generation. It is permissible to draw an analogy with cancer and to interpret the heterotypical mitosis there as a terminal phase of growth, a view which is strengthened by the occasional occurrence of this peculiar form of cell division in the chronic proliferative changes of superficial glossitis in elderly individuals. In the artificial propagation of Jensen's tumour we have only been able to convince ourselves of the occurrence of the heterotypical mitosis at definite intervals and then always in association with other recurring phenomena, notably the establishment of intimate secondary connexions between the nuclei of adjacent parenchyma cells. The occurrence of the heterotypical mitosis in chronic superficial glossitis may be legitimately correlated with the truth that the cells of malignant new growths are endowed with powers of differentiation in one direction only, which has hitherto been the most powerful argument we possessed in favour of the opinion that a cancer arose in the tissues of the primary site the structure of which it imitated. It will be obvious why cancer need not always follow upon the final stages of cell multiplication but only when the process of nuclear fusion has been properly consummated, to secure which there is no special mechanism, and consummation is therefore attained even more rarely than in the case of the sexual elements, to secure the union of which one is provided.

Attention has been drawn to the fact that all hypotheses in explanation of the origin and nature of cancer break down, not only in not explaining how growth is maintained but also before the problem of the peculiar age incidence of the disease. Several investigations have shown that time limitations modify the fundamental features of cancer in an important way. The effects of time cannot be explained on the assumption that the growth of cancer is uniform and continuous. They harmonise with the features of a form of proliferation which is incessantly renewed and therefore support the cytological observations. The relations which exist between time and various features presented by cancer all bear upon the explanation of the increasing frequency of the disease as life advances. Different but definite limits are set to the rate of growth, to the size of the body—i.e., total amount of growth—and to the duration of life in man and animals. A parallel can be drawn between those specific characters and the equally specific age incidences of cancer. They are all dependent on factors innate in the different forms of life and the time when malignant new growths appear is as much determined by the biological laws peculiar to each species of animal as are the form of the body and the absolute length of life.

The span of life of the individual is not the same as that of the separate organs and tissues which have contributed to its maintenance. Some organs and tissues early attain full development and disappear; others are only active during adult life; and others, again, as long as life lasts. The age incidence of cancer in different organs presents contrasts similar to those found in species with long and short lives. Other factors, however, greatly modify the mere influence of time and we do not perceive in the organs of an individual the sharp distinctions exhibited in the representatives of different species. There are, however, indications of such differences. To take only one or two instances from human pathology, the chorion has a short life and chorion epithelioma appears at an interval after fertilisation which corresponds to its old-age stages of proliferation. The mamma and the uterus attain maturity more slowly and are active for a relatively longer time but carcinoma has its highest incidence when the organs are undergoing involution. The skin remains functional long after middle life and the age at which squamous-cell carcinoma is most frequent corresponds. As the compass of life determines the general incidence of cancer in a species, so also the same factor helps to determine the occurrence of malignant new growths in different sites in any one animal. The age at which the maximum incidence of cancer occurs in any one species results from the combined action of the factors which have been discussed; but at special sites there may be contributory causes whereby the final stages of proliferation are attained more early, where, e.g., chronic irritation or injury has led to excessive cell multiplication. All the many modifications which time limitations effect on the characteristic features of cancer support the conclusion from the experimental and cytological observations; and the view that the unbounded growth of cancer follows on the terminal phases of normal cell multiplication in consequence of nuclear fusion makes the age incidence of the disease a necessary consequence.

The provisional working hypothesis based on the study of how cancer grows requires no subsidiary assumptions to explain all its other features. The circumscribed nature of the primary area, or areas, the relative independence of malignant new growths, their power of continued proliferation, their destructive and infiltrative character, the formation of metastases, the peculiar age incidence, the single differentiation, transmission with all its limitations, the absence of a specific symptomatology, and the addition of malignant growth to congenital tumours, are all naturally explained if it be true that the cells of the body and embryomata tend sometimes in the final stages of proliferation to undergo changes which prepare them for nuclear fusion which is occasionally consummated. These investigations are still proceeding on other tumours of different character and no claim whatever is made to finality in laying before you some provisional conclusions which must stand or fall in accordance with the results of future experience. At present these provisional conclusions possess the great value of stimulating us in our study of a very difficult and involved subject and of assisting us to devise means for experimentally attacking it. I may now briefly summarise the main results of the investigations.

1. Cancer is identical in all vertebrates and in growing accommodates itself in a striking manner to the time limitations imposed by the compass of life in different animals.

2. Under favourable experimental conditions the growth of cancer is undefined, of enormous, and, so far as we can judge, limitless amount.

3. Artificially propagated cancer displays all the characteristic features of the growth of sporadic tumours.

4. The growth of artificially propagated cancer is due to the continued proliferation of the parenchyma cells. We have confirmed this conclusion, originally advanced by Jensen, on his own tumour and on four other different carcinomata.

5. The artificially propagated parenchyma makes the reaction of the host subserve its own needs.

6. Artificially propagated tumours cause no symptoms in the organism to which they have been added.

7. The power of differentiation is definitely in one direction only, even three and a half years after separation from the original host.

8. The number of chromosomes constant for the healthy body tissues is retained, notwithstanding the recurring reduction of this number to the exact half.

9. The balance of evidence is in favour of the growth being interrupted and not uniform and continuous.

10. From the standpoint of therapeutics the investigations of the Imperial Cancer Research Fund thus far establish the early surgical treatment of cancer and of the conditions suspicious of cancer, upon that experimental and rational basis which has hitherto failed. Artificially propagated tumours produce metastases as do sporadic tumours. Sufficiently early removal of the local transplanted tumour removes metastasis from the region of possibility and the immediate practical outcome of the whole investigation is a strong experimental justification of early operation in cancer. We have made many attempts to modify the growth of propagated tumours; they have been, however, purely empirical and must continue so until the fundamental problem which I have outlined has been solved.

We have certainly not ascertained all the truth and it would be rash to forget that the positive experimental results are at present based upon observations in mice only. This may be too narrow a basis and I must therefore protest that I do not appeal to you in support of any hypotheses explanatory of the nature and origin of cancer but simply in advocacy of the necessity for further investigation into how cancer grows in the hope that we may determine why it grows. I have laid before you a provisional interpretation of the few isolated observations we have made thus far, with the conviction that it is capable of being tested by investigations now progressing, and this is a very different matter from taking refuge from criticism in a postulate which cannot be submitted to objective investigation.

The Milroy Lectures

ON

INDUSTRIAL ANTHRAX.

Delivered before the Royal College of Physicians of London on March 7th, 9th, and 14th, 1905.

BY T. M. LEGGE, M.D. OXON., D.P.H. CANTAB.,

HIS MAJESTY'S MEDICAL INSPECTOR OF FACTORIES.

LECTURE III.[1]

Delivered on March 14th.

MR. PRESIDENT AND GENTLEMEN,—To follow the incidence of anthrax on the workers in the different processes in the three main industries concerned, wool, horsehair, and hides and skins, it is only necessary to remember the following points. In the case of wool, with the exception of Van mohair, the material is unwashed until after the fleeces are opened to examine their condition, sorted according to colour and quality, cleansed from dust in the willow machines, and blended in large heaps to obtain a uniform shade of colour in bulk. Dust is inseparable from each operation. It next passes through three separate tanks or wash bowls containing soap solution kept at a temperature of about 130° F., so that the effect of washing may be expected to lessen the risk from anthrax in the later processes after drying—namely, carding, combing, finishing, and gilling—to which it is subjected prior to spinning. In considering danger from horsehair distinction must be made between the short mane hair to be curled for stuffing purposes and the long tail hair to be woven into hair cloth and, again, between material that is dyed and that which is undyed. Were all material dyed I believe that the incidence of anthrax in the industry would be materially lessened, because for this process to take effect the hair must be left for some hours in the dyeing solution heated by passage of steam through it. Although in the trade this process is described as "boiling" it is rare for a temperature of 212° F. to be reached throughout the solution. Dirt, however, is mechanically removed and probably the virulence of the anthrax spores is diminished. Specifications unfortunately require at times that horsehair shall remain undyed and shades of a grey colour are demanded. Manufacturers allege that to obtain these grey natural colours material must be used from countries like Siberia in which anthrax is rife. Be this as it may, frequently all the early dusty processes of opening, sorting, willowing to free from dust, and drawing into bundles according to length are done with material that has undergone no preliminary washing process. Finally, to set the curl the hair is exposed to dry heat at a temperature of 250° F. for 24 hours or is exposed to steam under pressure, so that risk after leaving the factory is not worth consideration. Long hair for weaving purposes is always soaked in a warm soda solution and danger is minimised, as the process of heckling to separate the individual hairs is done while the material is wet. Bristles undergo only a process of dry heckling—frequent drawing of the hair through upright steel pins—before they are used in brush-making. As a rule they arrive sorted and cleaned except in the cheaper kinds, notably "Chinese riflings," which are of low quality and too short to be properly bundled according to length. Large quantities of China mane hair are also used in the manufacture of scrubbing and other brushes and this, although it frequently has undergone no cleansing preparation in China, undergoes no treatment other than that described in the case of bristles. In hides and skins evolution of dust and consequent danger are greatest in the early process of sorting and throwing into heaps according to quality. The precise occupation at which the affected persons were employed is shown in Table XII. arranged in the order of the processes of manufacture from the arrival of the material at the factory to the time when it leaves in a finished condition.

TABLE XII.

WOOL.

Handling bales at wharf	1	Drying	1
Vanman	1	Carding and combing	16
Warehouse	4	Finishing, gilling, and preparing	6
Overlooker	1	Spinning and weaving	6
Occupier	1	Waste pulling	1
Woolsteeping	1	Sweeping floors	1
Opening bales	3	Dyeing	1
Sorting	16	Engine-house	1
Willowing	13	Infected outside factory	3
Blending	3		
Wool-washing and wool-running	7	Total	88
Mechanic	1		

HORSEHAIR.

Vanman	1	Yarn winding	1
Clerk in office	1	Stuffing boxing-glov	1
Warehouse	4	Stuffing mattresses	1
Opening, weighing, and carrying	9	Emptying sacks	1
Sorting and mixing	3	Wet heckling	1
Willowing	7	General work	1
Drawing and dressing	9	Infected outside factory	5
Curling and carding	11		
Brushmaking	14	Total	70

HIDES AND SKINS.

Dock labourers	16	Portmanteau-making	1
Wharves or warehouses	41	Leather seller	1
Fellmonger	1	Picker strap-making	1
Tanyards	24		
Boot-making	1	Total	86

OTHER INDUSTRIES.

Docks	2	Worker in harness furniture	1
Fruit and vegetable warehouse	2	Vanman	1
Horn manufacture	2	Worker in mother of shell	1
Rag sorting	1	Knife hatter	1
Linen weaver	1	Unloading grain	1
Chemical manure	1	Grain dealer	1
Saddler	1		
Railway porter	1	Total	17

[1] Lectures I. and II. were published in THE LANCET of March 18th (p. 689) and 25th (p. 765), 1905, respectively.

ANTHRAX IN RELATION TO THE WOOL AND WORSTED TRADES.

There is interest in comparing the facts now known of the incidence of anthrax in wool and worsted as regards type of the disease, class of persons attacked, supposed dangerous material, and other circumstances with those brought to light a quarter of a century ago when the disease first came prominently into notice by the report of Mr. J. Spear in 1881.[2] He dealt with 32 cases (21 fatal) which occurred during 11 months, November, 1879, to September, 1880, in the neighbourhood of Bradford. Of these nine were typical cutaneous anthrax (two fatal) and the remaining 23 (19 fatal) fully developed internal anthrax. Internal anthrax was, he wrote at that time, "the form of the disease which is the much more common one, at all events the more commonly recorded one amongst wool-sorters," and if there were added cases which were considered mild or rudimentary attacks of the internal form the fatality would appear correspondingly less. During the six years 1899 to 1904 only six cases of the internal form have been reported and there would thus appear to have occurred a remarkable change in the type of the disease prevalent in Bradford, the external and internal form having changed places as regards frequency of appearance. As to the diminution of internal anthrax there is no doubt. Some explanation of the change may be found in the more frequent diagnosis of external anthrax now but this is insufficient to explain the very great reduction in cases of true wool-sorter's disease. Moreover, mild or rudimentary attacks of the constitutional form of the disease are never reported now. Several of the cases investigated by Mr. Spear followed on manipulation of gravely infected Van mohair. More recent cases of internal anthrax in 1898 and 1899 similarly followed one another quickly on manipulation of badly infected Persian wool. With our knowledge of the greater virulence of the bacillus under certain conditions it is not unreasonable to assume that variations in type may be due to this cause and that at some future time there may be recrudescence of the severer form.

The principal circumstance, however, which has altered since the time when Mr. Spear wrote is that under which the manipulation of the wool takes place. Now, in addition to regulations requiring care in the opening of the bales and removal of the damaged wool or hair, fallen fleeces and pieces of skin, none of the dangerous specified wools (Alpaca, Pelitan, Cashmere, Persian, Camel hair, and Mohair) may be opened or sorted except at a place where a constant draught of air maintained by a fan carries the dust away downwards. While it cannot be said that introduction of exhaust ventilation at the sorting tables has removed the danger entirely, as the table shows, claim can be made that it is a material safeguard. Instances could be cited in which occurrence of anthrax seems to have followed as cause and effect on cessation or impairment of action of this fan exhaust. Changes in type of the disease therefore may be due to these altered conditions of working. 25 years ago Mr. Spear insisted also on the fact that "with rare exceptions only those suffered who were employed in the first manipulation—in the sorting process,"[3] qualified, however, by the statement that "the power of the wool for mischief cannot be said to be exhausted here, for in the combing-room the material may possibly prove infective." For several years later there must have been the same absence of cases among the carding, combing, and spinning hands, for in a Home Office Report in 1897,[4] charged especially with suggestion of remedial measures, the later wool-combing processes are not specially referred to. Since then, as shown in the table, cases have been most numerous in the processes subsequent to the washing of the wool. Had the scope of the earlier inquiry covered a longer period than one year and extended to other industries such as the carpet and felt manufacture, no doubt cases in departments other than sorting would have been found to occur more frequently than was supposed. So frequent did these cases become that regulations were introduced requiring as perhaps the most important provision isolation from other processes and mechanical exhaust ventilation for the removal of the dust in the process of willowing or cleaning of the material. Cases, however, still continue to be more frequent in the rooms where the carding and combing processes are carried on. I say rooms advisedly because personally I believe some, perhaps most, of them are due to infection from unwashed wool, because though combing and carding and spinning are the principal, they are not the exclusive, operations carried on in them. The wash bowl occupies a portion of this room or is connected by a passage and along this a current of air may pass from where the unwashed material is being treated. In the few factories in which incidence on workers in the combing processes has been most frequently observed this absence of separation of the processes connected with washed and unwashed material has been noted. This explanation is insufficient, however, to account for all the cases arising during the later processes. In the year 1904, for instance, two persons at least were attacked in factories where no raw material but only finished "tops" (probably of Persian wool) were used. These tops must have passed through all the various stages of cleaning, washing, and the minute separation of one fibre from another in the combing machines at one factory before they were conveyed to the other where infection occurred.

Although the pulmonary type of the disease was first noticed in Bradford after the introduction of alpaca and mohair as textile materials in 1837 several deaths occurred in later years (1846, 1853–4, 1867–8, and 1874) from manipulation of these materials[5] the danger from Van mohair (introduced about 1863) seems to have overshadowed that from other material such as Persian wool at the time of Mr. Spear's inquiry. He gives the following list of foreign wools in the order of their apparent noxiousness as it was at that time considered to be: (1) Van mohair, (2) Persian, (3) Camel hair, (4) Alpaca, (5) Turkey mohair, (6) Pelitan, (7) Cape mohair, and (8) Cashmere. Now the order would be: (1) Persian, (2) Turkey mohair, (3) Van mohair, (4) East Indian, (5) Camel hair, (6) Alpaca, (7) Pelitan, and (8) Cashmere. Possibly the disappearance of Van mohair from the position of greatest noxiousness is due to the fact that Van mohair alone is required by the regulations to be washed and sorted while damp if at all. The list does not take account of the amount of the various materials used. Danger from East Indian wool which, although very sandy, is believed to be exported in a washed condition, does not appear to have attracted attention, no doubt because its use is much larger in the felt manufacture than in the worsted. Probably the use of Persian wool has increased since 1880. The explanation why it is so largely in demand arises from the fact that this breed of sheep is one of the few in which the wool is naturally of a black, brown, or fawn colour. Thus it is stated that in the Chipal breed in the districts round Bassorah, Bagdad, and Mosul only 20 per cent. of the flocks contain white sheep, the remainder being black, grey, fawn, or brown; and the wool is of a finer quality than that of other breeds exported from Mesopotamia. With the demand for cloth of khaki colour there is no likelihood of a diminution in the supply of this Persian wool. Fresh openings for its manipulation in the worsted factories are constantly sought. Thus the consul reporting on the trade of Nanking[6] alluding to the uselessness of trade catalogues in general says: "The only one which appeared to me to have possibilities in it was addressed by a firm in London making khaki uniforms. I wrote to the senders pointing out that as the Chinese army was now being reorganised if they would appoint an agent in China it might be possible for them to obtain a contract to supply uniforms for the foreign troops."

It is customary to attribute the absence of anthrax from manipulation of the immense supplies of Australian and New Zealand wool to the fact that such wool has a larger proportion of natural grease or "yelk" in it, the presence of which would tend to stop diffusion of dust. To me this reason is not sufficient to account for the facts and I attribute the immunity mainly (1) to comparatively small incidence of the disease in animals; and (2) to the precautions taken to prevent the spread of disease and to secure proper disposal of the carcass. The existence of similar precautions would explain why the disease is apparently transmitted so rarely from countries such as the Argentine Republic where anthrax among animals is common. Thus in New South Wales[7] in 1902 "the sheep were free from disease except some few cases of anthrax and the losses from it were very slight." In 1901 no outbreaks were reported.

[2] Annual Report of the Local Government Board, 1880–81, Supplement containing Report of the Medical Officer, p. 66.
[3] Ibid., pp. 78 and 83.
[4] Conditions of Work in Wool-sorting and other Kindred Trades, 1897.
[5] Bell: Article on Anthrax in Clifford Allbutt's System of Medicine, vol. ii., p. 539.
[6] Trade of Nanking, Annual Series, No. 3004, 1903.
[7] Department of Mines and Agriculture, 1903.

The total number of sheep and lambs shorn in 1902 exceeded 25,000,000. In South Australia[8] in 1902 the list of diseases among sheep does not include anthrax. In the report of the chief veterinary officer of New Zealand for 1899 four outbreaks of anthrax are recorded—the first appearance of the disease since 1895.[9]

Still in seeking for means to render safer manipulation of wool and horsehair from Asia the practice of washing the sheep prior to shearing, willowing it from dirt, and discarding the fallen fleeces in the country of origin would be the next best thing to disinfection of the material were that possible by means of steam. This is what some manufacturers would wish to see done and in March, 1903, the chambers of commerce of Bradford, Halifax, and Kidderminster issued a circular letter pointing out the unsatisfactory condition in which Persian wool was received in the country. Nearly every bale is falsely packed—i.e., the fleeces contain locks (inferior wool), skin, fallen wool, and cotton rags, besides soil, sand, dirt, and dust. They urge especially that persons consigning Persian wool should endeavour, first, to keep out of the bales extraneous matter, and, secondly, to pack locks, fallen wool, and skin in separate bales. Any loss on locks sold at lower prices would be more than recouped by higher prices obtained for honestly packed bales. All the evidence shows, however, that wool is washed less frequently before shipment than it used to be. Thus in 1869 158,000 bales of greasy unwashed wool were sold as compared with 681,500 in 1902, the figures for washed fleeces in the same years being 266,000 and 2500 respectively and for scoured wool 114,000 and 314,000.[10] The reason for this diminution in the quantity of washed fleeces is that the extra cost of wasning was not made up to the growers by reduction in freight or the slightly increased market price obtained for it in London.[11] Moreover, the users of wools in this country desire to scour the material themselves in the manner most suited to their particular trade and object to scouring carried out in the colonies and elsewhere. In the report of 1897 already referred to the committee expresses the wish that it were possible for H.M. consuls to report anthrax-infected districts so that by the ear-marking of the bales from such localities imported infection might be traced and arrested.

Mr. Spear[12] was informed that it would not be difficult in Constantinople, where the classification of wools from Asia Minor was made, to secure that fallen fleeces should be classed apart. Pressure in this direction by combined action on the part of manufacturers or of the legislature might have the effect on dealers and native growers abroad of making them take steps to keep apart these fallen fleeces or to separate them in Constantinople. This would of course merely shift the risk from the workers at home to those in Constantinople. The difficulties in the way of carrying out such proposals are many. In the absence of official records based on veterinary reports knowledge of anthrax-infected districts would be untrustworthy and such evidence might tend to grow less when it became realised that knowledge of the incidence of anthrax was followed by stigma attaching to the wool or other material. Other diseases besides anthrax are rife among animals in Asia and it is unlikely that, in the absence of discriminating veterinary reports, the consuls would be in a position to say what bales were infected. The practice, too, of storing wool dependent on the needs of the market, or on fluctuation in price, would equally tend to make such protection illusory. That the matter, however, has not escaped the attention of some of the consuls is apparent from the following quotation from the consular report from Kermanshah in Persia[13]: "In reply to an inquiry as to why more care was not taken in washing and sorting the wool, the Kermanshah wool merchants declared that no skins, cotton rags, or pieces of string were contained in the wool exported by them. They did not wash the wool so well for export as for spinning in the country, as well-washed wool scarcely fetched a better price in Bagdad than the usual wool exported there." If in this country, with all the precautions which are taken to check the spread of the disease and to prevent the flesh of anthrax-infected animals from coming into the market, illicit dealing is still practised and every year carcasses thus infected are found in the meat markets and butchers' shops exposed for sale, what hope is there that in other countries where there are no regulations, where cupidity is not less marked than at home, and where the disease is probably a hundredfold more rife, material good could be achieved by the branding of bales or by reliance on the exclusion of fallen fleeces in the sorting carried on in Constantinople?

The tariff duties of the United States[14] touch on this point by classifying in three divisions the different kinds of wool imported and levying customs dues of varying amounts according to the quality and previous treatment to which it has been subjected. Thus wools of the first class, including that from Bagdad and China and British colonial wool, among others; and of the second class (including camel hair, angora goat, and alpaca) if imported scoured pay thrice the duty; and if imported washed twice the duty they do if imported unwashed. The duty on these wools also is doubled if the value is increased by sorting or rejection of any part of the original fleece, or, again, if it be reduced in value by the admixture of dust or other foreign substance. High duties are placed on any fraudulent attempt to pass an inferior material as of high quality wool. In the inferior wools of Class 3, including South American, native Smyrna, Russian, camel hair, and "wools of like character such as have been usually imported into the United States from Turkey," the classification is based on an increase in the duty on material containing less than 8 per cent. of dirt. These duties apparently have no reference to the prevention of anthrax, nor is it easy to see, apart from pressure from buyers in the United States, what inducement there is for the removal of dirt in the third class when reduction of the amount of dirt to 8 per cent. increases the amount of duty paid. In the first and second classes certainly twice the duty (24 cents per pound) by reduction in value by admixture of dirt would be an incentive to cleaning the wool. That an effect in the cleaning of the wool from China, however, is produced by these duties is shown by the following extract from the report on the trade of China in 1903. "The best wool comes from the flocks of the petty chieftains outside of China proper, who only shear their sheep once a year. The clip is therefore longer in staple and freer from dirt than that obtained from Chinese sheep, which are shorn two or three times a year. All attempts to prevent more than the ordinary amount of dirt which a fleece must collect have proved ineffectual and wool containing 30 per cent. of real estate still continues to be sent down. The cost of carriage is some £1 6s. per cwt., and there is quite sufficient dust in Tientsin to render it unnecessary to pay at this rate for transportation thither of the sand of Central Asia. The imposition by the United States of the heavy import duty on wool of 4c. gold per pound led to its being thoroughly winnowed prior to shipment and although the quantities recently shipped appear to be less than were shipped, say, ten years ago, the actual amount of clean wool which now goes forward is in reality greater."

Wool in Asia Minor is collected annually at fairs in centres such as Bitlis, Djezireh, and Mogoul. The nomad tribes of Kurdistan bring their flocks to be sheared there and the small dealers bring the wool that they have collected in different parts of the country.[15] Hair and hides in China are collected by Chinese agents in the interior. No foreigners deal directly with the seller in the interior. 50 per cent. of the horsehair comes from Mongolia and 50 per cent. from near Mukden in Manchuria. Tail hair is washed by the Chinese in the interior but manes and combings undergo no treatment as the price at which they are sold would not pay for cleaning. Bristles are collected as follows. The pig when killed is placed in boiling water and the bristles are scraped off. They are washed in hot water, dried in the sun, and roughly bundled according to length and packed in baskets. These baskets are sold to the interior buyer who opens, cleans, and resorts the bristles which he sells to the foreigner who packs them for shipment. No disinfectant of any kind is used. Hides and goat skins are sold by gross weight which includes the mud and the dirt. If the demand is great anything having the appearance of a hide or a skin is included; if slight the bundles contain good skins, for the interior Chinese buyer knows that then the foreigner will be particular and refuse bad skins. These will be stored up until the market improves. It is entirely a question of price.

[8] Report of Minister of Agriculture, 1903, p. 38.
[9] Veterinarian, 1901, vol. lxxiv., p. 519.
[10] Schwartze and Co.'s Report, 1902.
[11] Principles of Wool Combing, by H. Priestman. G. Bell and Sons, 1904.
[12] Loc. cit., p. 110.
[13] Annual Series, No 3189, 1904.
[14] Customs Tariff Act, 1897, R. F. Downing and Co., New York.
[15] Spear: Loc. cit., p. 85.

ANTHRAX IN RELATION TO HIDES AND SKINS.

The history of anthrax in this country in relation to hides and skins can be best traced from the reports of Mr. Spear [16] and of Dr. W. H. Hamer [17] on the occurrence of cases in London. Mr. Spear's report dealt mainly with an outbreak in a Bermondsey tanyard which occurred in 1882–83 due to a consignment of bales shipped from Shanghai. In the space of a few months nine men were attacked, of whom three died. Owing to the danger attaching to the manipulation of the bales several were disposed of in Paris and various ports in Italy and subsequently news arrived that seven men, who had handled these hides in Paris, had been attacked, of whom two had died. Dr. Hamer dealt with a total of 90 cases which had occurred between the years 1873 and 1893. In 86 the occupation was ascertained. Of these 63 handled the hides while in the possession of the hide broker and 23 (of whom 15 were tanners) after removal to other industrial premises. Infection was believed to have been conveyed from China hides in 26 cases, from East Indian in 12, from other specified kinds in nine, and in 34 the source could not be ascertained. The later records which have been obtained since 1899 show that, although the area from which infected hides may arrive has been widened, material from China and East India is now, as it was a quarter of a century ago, the principal source of danger. And later information agrees with the conclusion arrived at by Dr. Hamer that infection from wet hides is very rare. In only two out of his list of 90 cases was there suspicion that wet hides were the cause. Apart from the lessened diffusion of dust by the wet-salting process, Dr. Hamer suggests that the presence of moisture would tend to cause the spores to assume the bacillar form in which they would be more likely to succumb. The cutaneous type of the disease has remained the same, evidence of pulmonary anthrax being as absent now as it was in previous investigations. Dr. Hamer found some ground for the hope that substitution of wet for dry hides which the trade appeared to encourage would, if continued, lessen the risk of anthrax to those manipulating foreign hides in London. He gives the figures of the amount and value of dry and wet hides imported in the years 1882 and 1892. I have added the figures for 1902 (Table XIII.).

TABLE XIII.

Year.	Dry hides.		Wet hides.	
	Cwts.	£	Cwts.	£
1882	576,196	2,098,895	614,471	1,645,786
1892	368,191	946,354	541,286	1,138,903
1902	286,334	845,484	661,198	1,595,109

From this it appears that the total consumption of hides remains the same in 1902 as in 1892; the increase in wet hides balances the reduction in dry. I believe, however, that any conclusions drawn from the above figures are illusory, as the amount and value of dry hides imported are subject to very considerable fluctuation in the trade returns from year to year.[18] If, for instance, the figures for the year 1900 are taken the amount of dry hides imported would be found to exceed those even for 1882 by 171,551 cwt. Again, while from Bombay and Bengal respectively in 1900 dry hides to the amount of 279,045 and 217,787 cwt. were imported the figures in 1903 dropped to 5261 and 41,619 cwt. It is instructive to show for each year side by side the number of cases of anthrax in which strong suspicion attached to Bombay and East Indian hides and the varying amounts imported from Bombay, Madras, and Bengal in the same years (Table XIV.). Famine prevailed over large districts in India in 1899 which accounted for the enormous quantities of inferior hides shipped to this country in the following year. China hides are recognised in the trade as particularly dangerous and assurance is freely given that this risk has diminished the trade in them. Thus the outbreak in Liverpool in 1900 was attributed to the first introduction of China hides to that port. No diminution is reflected in the Board of Trade returns from year to year which would point to the fact that if imports are reduced at one port they are increased at another. Thus, the value of China hides was estimated in 1899 at £21,455, in 1900 at £12,907, in 1901 at £11,053, and in 1903 at £17,131. The reduction in 1900 can be accounted for by the increased supply of cheap East Indian hides and in 1901 by the great flood in the Yang-tze valley. In 1903 the amount of dry hides imported from China stands only below that from Russia, Holland (of which much may be Chinese), and the East Indies. Evidence from consular reports leads me to suppose that the supply will be increased with the opening up of fresh treaty ports. Thus the consul at Nanking [19] writes: "The export of goat skins has made steady progress since the opening of the port. The value of the trade in 1899 was only £1800, as compared with £32,840 last year. There is undoubtedly a future in Nanking for this class of goods as the supply in Honan is enormous. The same remark applies to hides as to untanned goat skins." Again, the British commercial attaché [20] at Peking writes: "The export of hides has increased in volume 347 per cent. since 1891. Large as is this increase the export of hides does not begin to compare with that of India where conditions governing the supply are almost the same as in China. In both countries cattle are solely bred for agricultural purposes and it is only when they get sick or die of old age that their hides are available for commerce. The export of skins is also a large and growing one, having increased 457 per cent. in value in the last decade." In a later year he says: "Some 40 years ago skins and wool were only remotely thought of ..... and the skins of goats from Honan and Shanghai, which are all converted into the smart American boot, have gone a long way towards building up the wealth of Tientsin."

TABLE XIV.

Year.	Dry hides imported from Bombay, Madras, and Bengal (cwts.).	Number of cases of anthrax attributed to East Indian hides.
1898	117,806	1
1899	144,749	3
1900	507,131	7
1901	127,484	9
1902	51,301	3
1903	49,677	3
1904	—	2

The hide and skin industry of Germany appears to be greater than that of this country. Thus the number of hides imported into Hamburg in 1903 is stated in the consular report [21] to have exceeded that of Antwerp, Havre, and the United Kingdom combined. Reports of the factory inspectors give no account of incidence on dock labourers or on those manipulating the material in warehouses prior to tanning processes. They have contained every year from 1891 to 1902 references to cases in tanneries but without attempt at complete returns. The number in tanneries and leather factories thus referred to is 65 with 13 deaths—20 per cent. In three tanneries at Kirchhain in 1898 there were 11 cases and in 1902 six. Here sheep skins only are dealt in and of one consignment of 2000 skins 60 were believed to be infected with anthrax. In France information is still scantier than that obtainable in Germany. In the district of St. Denis, near Paris, record of the cases has been carefully kept since 1875 by Dr. Le Roy des Barres.[22] During the years 1875–97 he has seen 72 cases distributed as in Table XV.

TABLE XV.

—	No. employed.	Cases.	Per cent.	Fatal.	Fatality per cent.
Horsehair ...	160	15	9·3	3	20·0
Fellmongers	760	57	7·5	7	12·3
—	920	72	8·8	10	14·0

[16] Annual Report of the Local Government Board, 1882–83. Supplement containing the Report of the Medical Officer.
[17] London County Council: Report of the Medical Officer on Anthrax in London, April 5th, 1894.
[18] Annual Statement of the Trade of the United Kingdom with Foreign Countries and with British Possessions.
[19] Annual Series, No. 2907, 1902.
[20] Trade of China for the Year 1901, by J. W. Jamieson, No. 2912, and for 1903, No. 3127.
[21] Annual Series, No. 3186, 1904.
[22] Annales de l'Hygiène Publique, 1897, vol. xxxvii.

All but one of the 57 cases occurred in the only premises where foreign material was dealt in, although there are at least three other important tanneries. Chauveau[23] describes isolated outbreaks in tanyards at Morlaix and the neighbourhood in which the incidence on eight men and 23 animals coincided with the first use in the district of hides imported from China.

There seems no reason for doubt that anthrax can be conveyed by completely tanned material. Apart from the cases tabulated from tanned hides, where possibly infection may have been conveyed from raw hides present on the premises, anthrax has been conveyed to horses apparently through the harness. Thus two horses contracted anthrax, the lesion in both cases being on the flank where a quite new pair of reins came in contact with the body.[24] Experiments have shown that the tanning fluids are insufficient to destroy the vitality of the spores. Thus Ravenal found spores still virulent after immersion for 224 days in the seven tanning fluids of different strength ordinarily used, nor could he suggest any efficient disinfection of the hides which was not likely to injure them. Houston's[25] experiments demonstrating the presence of anthrax spores in the effluent from the catch-pit of a hide factory show that they must be able to survive also the arsenicating, liming, and other processes. In an outbreak in Wisconsin,[26] America, dried hides were placed in solutions of formaldehyde varying in strength from 1 in 500 to 1 in 10,000. At the end of 11 days the anthrax bacillus was cultivated from the solutions containing from 1 in 10,000 to 1 in 2500. The formaldehyde combined gradually with the hide and damaged the material. Success in this direction has been claimed for certain patent preserving fluids of one of which it is reported that anthrax spores are killed in hides and skins soaked for an hour in a 4 per cent. solution. Houston[27] has, however, tested it with disappointing results. During the outbreak in Liverpool the use of hypochlorite of soda was recommended and practised, but cases occurred after as well as before its use. An order of the German Government, dated May 9th, 1902, describing the precautions to be taken in manipulating certain hides, states that no method of disinfection is known which is at the same time certain in its action, easily carried out, and not injurious to the material. Obviously to be of real benefit disinfection of hides if practicable should be done before the material is opened in the warehouse where most of the cases occur and to secure this is impossible at present. In this country consequently the precautions adopted in handling hides and skins coming from China and East India are slight, and directed solely to protection of the workers' clothing by overalls, of their food by prohibition of meals in rooms where the above-named hides are manipulated, provision of washing accommodation, and simple means for dressing wounds. A brief summary of the symptoms of the disease and the necessity for prompt attention are also given.

ANTHRAX IN RELATION TO HORSEHAIR.

The occurrence of cases in a hair factory at Glasgow in 1878,[28] described by Dr. J. B. Russell, first drew prominent attention to the danger of anthrax to the workers from this material. In his report Dr. Russell cites numerous published reports in France, in one case dating as far back as 1777, in which workmen had been attacked with charbon and boils in opening and sorting bales imported from Russia. In France and Germany, indeed, use of this material appears to have contributed by far the largest share of cases of anthrax. The outbreak in Glasgow in 1879 was due to virulent infection from Russian horsehair. Nine persons were attacked, of whom seven died. Seven of the cases were of the internal type. In 1893 Chauveau[29] described a small outbreak from horsehair in a village in France which has many points of resemblance to that described by Dr. Russell. In less than four months there were seven cases with six deaths. Two of the cases were of the gastro-intestinal type and two of malignant anthrax œdema without external development of a malignant pustule. In this case China horsehair was believed to have been the cause. Since 1878 no case of anthrax was known to have occurred in Glasgow until an outbreak of five cases in 1900. During this second outbreak the particular factory in which all the early cases had occurred escaped, the firm having since 1878 discarded the use of Siberian hair altogether.

The possibility of steam disinfection suggests itself as the only effective means of removing the danger from manipulation of dangerous wool and horsehair. In the case of wool no thorough and minute inquiry as to whether this method is practicable has ever been undertaken. In 1880 a manufacturer in Bradford for the space of 12 months placed all bales of alpaca and mohair in a steaming apparatus at a pressure of five pounds for 12 hours. No experiments were made to see how far sterilisation was accomplished. The firm did not find that the material was injured for spinning purposes. Subsequently the firm discontinued the use of Van mohair wool and the need for steaming disappeared. To obtain certain effects, such as the fixing of a dye material on the wool, mohair after it has been carded is still exposed for one and a half hours to steam at five pounds pressure without injury. When high pressures, such as are commonly employed in disinfecting machines in this country, are used, with the increased temperature, there is increased tendency to damage the material. Thus Dr. W. A. Evans,[30] medical officer of health of Bradford, has on several occasions tried to disinfect dangerous wools by means of a Washington Lyons apparatus and says:—"Although my disinfection may have been successful the wool has almost always been irretrievably ruined, altered in texture and very much in appearance."

The practicability of steam disinfection of horsehair has been thoroughly tested in this country and in Germany. The problem of steam disinfection when applied to horsehair and bristles is presented perhaps in its most difficult form. The natural resistance of the spores is increased by the dirt and grease of the material in which they are imbedded. The hair is tied tightly together and in the case of mane hair or combings the bales weighing about five hundredweights are hydraulically press-packed. Recent experiments by Proskauer and Elsner[31] have shown, too, that anthrax spores artificially placed on horsehair are killed with greater difficulty than when on silk. The experiments in this country by Webb and Duncan[32] have been carried out with known infected material, that is with horsehair in its natural condition in which the presence of anthrax had been demonstrated. The experiments were made in a Washington Lyons apparatus. They found that dust shaken from China hair subjected to a temperature of about 245° F. for 20 minutes appeared sterilised. When, however, the horsehair thus treated had been subjected to the process of carding and one horsehair fibre separated from another the anthrax bacillus was cultivated from the dust so produced. From this the conclusion was drawn that the process of carding liberated the spores which had escaped the first disinfection owing to its environment of grease and dirt. Nevertheless, numerous experiments with dust from combing machines showed that the disinfecting process had killed the great bulk of the bacilli and lowered the vitality of those which had survived. They could not sterilise horsehair in bulk by exposure to steam at about 24 pounds gauge pressure (253° F. actual temperature), even for 45 minutes. When the results of the German experiments became known Mr. Webb reduced the pressure at which he worked and found that equally satisfactory results were obtained with temperatures of 226° and 230° F.

The German experiments conducted in the Imperial Health Office extended from 1894 to 1900.[33] They have been very thorough owing to statements made by manufacturers that the hair made to undergo the preliminary steam disinfection was reduced in quality and, therefore, a source of loss. In the German experiments reliance is based on current saturated steam and not on superheated steam. Anthrax spores are killed by exposure to current saturated steam at 100° C. in five minutes, whereas 20 minutes' exposure is required when superheated steam at from

[23] Sur Divers Cas de Charbon, Annales de l'Hygiène Publique, 1892 vol. xxviii., p. 160.
[24] Obrichof: Ein Fall von Uebertragung des Milzbrands durch Leder. Archiv für Veterinärwissenschaften, 1903, p. 1030.
[25] Anthrax in Yeovil Sewage, p. 41. Second Report of Sewage Commission.
[26] Wisconsin Station Reports, 1900.
[27] Loc. cit., p. 41.
[28] Annual Report of the Local Government Board, 1878. Supplement containing the Report of the Medical Officer, p. 321.
[29] Annales d'Hygiène Publique, vol. xxix., 1893, p. 224.
[30] Transactions of the Epidemiological Society, 1903-04, vol. xxiii., p. 186.
[31] Zeitschrift für Hygiene, vol. xliii., 1903, p. 504.
[32] Annual Report of the Chief Inspector of Factories for the Year 1900, pp. 472 and 473, and for 1902, pp. 278-81.
[33] Arbeiten aus dem Kaiserlichen Gesundheitsamte, vol. xv., pp. 456-99, and vol. xviii., p. 1.

110° to 120° C. is used. With use of superheated steam spores in the centre of objects to be disinfected may be killed, while those lying on the surface and directly exposed survive. The temperature recorded in these experiments in the centre has been from 99° to 101° C. and in the latter from 105° to 141° C. The only explanation is that the superheated steam as it penetrates into the object gives up its latent heat and acts on the spores in the form of saturated steam.

Leaving out of consideration hair white or light grey in colour, which would be turned yellow, the general conclusion arrived at by the experimenters is that provided the pressure does not exceed two and a quarter pounds, equivalent to a temperature of 219° F., and due precaution is exercised in the management and regulation of the apparatus during the time of disinfection, no injurious effect is produced in the hair which could be considered as diminishing its value or causing it to be a source of loss. Success, however, is only to be attained by minute care in detail: (1) in the construction of the apparatus designed so as to allow the steam to enter from above and to find its exit at the lower part of the apparatus; (2) provision of pressure gauges marking clearly the point when the pressure of two and a quarter pounds has been reached and the provision of thermometers to control the temperature indicated by the pressure gauge; and (3) constant attention to the apparatus during the time disinfection is in progress.

Frequent occurrence of cutaneous anthrax among brush-workers in Belgium has recently caused inquiry to be made there also as to the possibility of removing danger in manipulation of the material. Satisfied of the impracticability of making steam disinfection obligatory in the numerous small workshops throughout the country (a feature of the industry everywhere which adds to the difficulty of controlling the danger) Dr. Glibert, principal medical inspector, has directed his attention mainly to experiments to determine how far simple boiling might be regarded as efficient. Using spores of anthrax which resisted a 5 per cent. solution of carbolic acid for one month, in none of his experiments could he find them capable of developing even after only 15 minutes' exposure. At the same time special precautions must be taken to secure penetration of the heat throughout the material because a thermometer placed in the centre of a closely tied bundle of horsehair 15 centimetres in diameter never registered 100°C., although the liquid in which it was immersed was maintained constantly at this temperature for one and a half hours. These experiments seemed to him the more satisfactory as they followed on unsuccessful results with similar resistant anthrax spores subjected by him (under rigorous conditions) to the accepted procedure of steam disinfection in one of the best equipped continental factories.

To secure certain destruction of all anthrax spores in horsehair absolute reliance cannot be placed on either steam disinfection or simple boiling. Adoption of one or the other is a very material safeguard and steam disinfection is practicable for all kinds of hair except that which is of white colour provided due care is observed. Risk, however, must always be run by those persons who prepare the hair for disinfection.

SOCIETY OF APOTHECARIES OF LONDON.—At a meeting of the Court of Assistants held on March 21st the following resolutions were adopted:—

1. That steps be taken to urge upon the Government the desirability of the amendment of the Midwives Act, 1902, in the following respects: (a) by a provision for payment by the local authority of members of the medical profession called in by midwives in cases of danger or difficulty as defined by the rules framed by the Central Midwives Board; (b) by provision for payment to the members of the Board of their reasonable travelling expenses and other disbursements incurred in connexion with their duties.

2. That a copy of the above resolution be sent to His Majesty's Privy Council.

A vote of thanks was passed to Mr. E. Parker Young for his services as the representative of the society upon the Central Midwives Board during the last two years. Mr. Parker Young, in acknowledging the vote, explained that during his term of office he had been present at every meeting of the Board and had signed nearly 10,000 midwives' certificates. Subsequently Mr. Parker Young was re-elected as representative for another year. The report of the adjudicators for the Gillson scholarship in pathology of the annual value of £90 was considered and adopted, the successful candidate being Mr. E. W. A. Walker, M.A., M.D. Oxon

The Hunterian Lectures

ON

THE PHYSIOLOGY AND TREATMENT OF SURGICAL SHOCK AND COLLAPSE.

Delivered before the Royal College of Surgeons of England on March 6th, 8th, and 10th, 1905,

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LECTURE III.[1]

Delivered on March 10th.

TREATMENT AND PREVENTION.

The introduction of fluids into the circulation.—The first attempt at this method of treating shock or collapse was by transfusing the blood from the veins of a healthy person to the veins of one dying from loss of blood. Transfusion and intravenous infusion were not only used more than two centuries ago for the treatment of shock and collapse but were much vaunted as a means of curing disease and of indefinitely prolonging life in the aged, and the method was so much abused in Paris in the early part of the eighteenth century that the Government passed laws to stop the practice and imposed serious penalties for those caught performing it. The value of intravenous infusion in the treatment of shock was drawn attention to in 1893 by Mr. Mayo Robson in a paper read before the Clinical Society. Transfusion is now never practised but curiously enough the name still persists and is commonly incorrectly used to describe the intravenous injection of water or salt solution.

There are four principal ways in which fluids may be introduced into the circulation for the treatment of shock: (1) By intravenous infusion; (2) by intra-abdominal infusion; (3) by rectal injection; and (4) by subcutaneous injection.

Very opposite views have been held by different surgeons as to the advahtages or otherwise of intravenous infusion in the treatment of shock. The arguments for and against it have been often founded upon purely hypothetical reasoning or upon isolated observations. With the experimental data now available and observations made of the changes in blood pressure with a sphygmometer of the results of this method it is now, I think, possible to arrive at definite conclusions with regard to it. Intravenous infusion raises the blood pressure in all conditions of shock; this has been proved by experiment upon animals by Crile and by observation on patients by myself and others. The rise in blood pressure occurs immediately and gradually increases with the continuance of the infusion. In cases of moderate shock where the vaso-motor centres are still active the pressure is well sustained after infusion, but in profound shock the pressure falls again after a short time unless the infusion is continued. Saline infusion acts by increasing the circulating fluid in the circulation and thereby indirectly raising the blood pressure. Its value is limited in the treatment of shock by the fact that it does not combat the cause of the fall in blood pressure which is the loss of peripheral resistance in the circulation. It is obvious that saline infusion does not act by controlling the capacity of the circulatory system but by diminishing the disproportion between the quantity of circulating fluid and the capacity of the circulatory system.

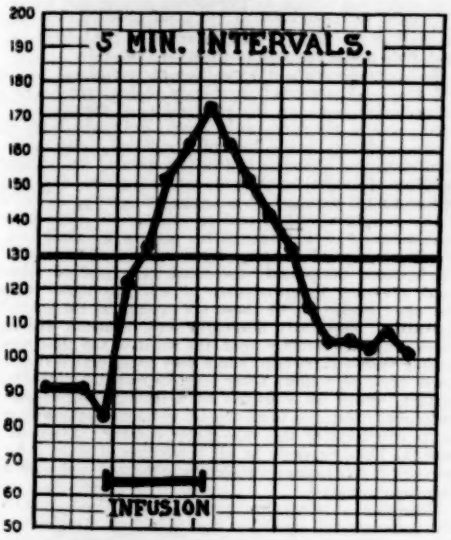
When salt solution is introduced into the veins in large quantities it begins after a time to escape from the blood-vessels into the tissues and produces œdema. Sherrington, and Cobbett and Roy have demonstrated that in shock a transudation of the fluid elements of the blood takes place through the walls of the blood-vessels into the tissues and that the specific gravity of the tissues is found after shock

[1] Lectures I. and II. were published in THE LANCET of March 18th (p. 696) and 25th (p. 776), 1905, respectively.

has persisted for a short time to have decreased owing to the quantity of fluid which they have received from the blood. It is doubtless this transudation of fluid from the blood into the tissues that accounts for the escape of the fluid from the circulation after intravenous infusion. This escape of the fluid from the circulation becomes after a time so rapid that if saline infusion is continued the blood pressure is not even sustained but falls while the solution is being run into the veins. A case is reported by Archard and Paisseau of a woman who, suffering from severe shock and collapse after an abdominal operation, was treated by continuous subcutaneous saline injection, ten litres of fluid being introduced in this way in 24 hours. She died from pulmonary œdema, and general œdema of the tissues was found post mortem. Crile has demonstrated that after about 320 cubic centimetres of fluid per kilo of body weight have been injected the fluid escapes into the tissues and causes œdema. So far, therefore, as raising the blood pressure is concerned the value of saline infusion is limited in the treatment of shock. It is nevertheless one of the most effective means that we possess of raising the blood pressure.

In a case of dangerous and subsequently fatal shock in which I had the opportunity of observing the blood pressure by means of the sphygmometer during intravenous infusion, I observed a rise in the blood pressure from 85 millimetres of mercury to 170 millimetres in the space of a little over 20 minutes as the result of the introduction of four pints of saline solution into the veins of the arm. This is a tremendous rise in blood pressure. The pressure in this case began to fall again at once and fell slowly until it reached a point just above the original level in one and a quarter hours (see Fig. 12). There is another way in which

FIG. 12.



The result on the blood pressure of a patient suffering from severe shock of an intravenous infusion of salt solution. Four pints were infused.

saline infusion is of value in the treatment of shock besides its effect on the blood pressure. As has already been stated, the blood in shock becomes markedly inspissated and its specific gravity is increased. This is undoubtedly a factor of very considerable importance in producing a fatal issue from shock, as the blood may become so thick that it will not pass through the smaller vessels and capillaries. Watson Cheyne has noted that coagulation of the blood in the pulmonary vessels may occur and materially increase the probability of a fatal issue. Cobbett and Roy have recorded that in dogs in which shock had been artificially produced the blood eventually became so thickened that it would only flow with difficulty from the largest arteries. This being the case it is obvious that saline infusion is of considerable value in counteracting this tendency for the blood to become thickened, and that far from saline infusion causing a dangerous reduction in the specific gravity of the blood, as has been supposed by some writers, it is barely capable of reducing the specific gravity to the normal. Quite apart, therefore, from its value in raising the blood pressure saline infusion is indicated in shock to reduce the specific gravity of the blood.

There are two ways of performing infusion. The one most commonly described is that of exposing the vein (usually the median basilic), ligaturing it below, incising it, and tying a glass cannula into the upper end; the fluid is then allowed to flow into the vein from a glass funnel attached to the cannula by an indiarubber tube. A quicker and, I think, a better method is to use a sharp metal cannula and to push it through the skin and vein wall in a direction towards the heart; with a little dexterity this is very easily done and the metal cannula can be got into a much smaller vein than the glass one. In treating shock the results are much better if the patient is infused early instead of waiting to infuse until the patient has reached a dangerous degree of shock. And it is much better to infuse moderate quantities of fluid of about a pint at a time repeated at intervals as the patient's condition seems to require it than to infuse a large quantity at one time. The cannula can be left in the vein and the tube wrapped round the arm ready to reinfuse when necessary. It is very useful to have a blood-pressure record kept with a sphygmometer (which can easily be done by the nurse) and to be guided as to the amount of fluid and the times at which to infuse by the record of the actual pressure. This is far better than the haphazard method of infusing only when the patient's condition is dangerous. The best temperature for the fluid is about 3° above normal body temperature to allow for cooling as the fluid flows through the tubing.

The solution most commonly used for intravenous infusion is a sterilised solution containing two drachms of common salt to the pint. This solution is erroneously called normal salt solution on the supposition that it represents a close approximation to normal blood serum in composition. This is, however, not the case; common salt often contains several extraneous chemical substances and even if pure salt is used the solution differs considerably from blood serum. Several forms of physiological salt solution have now been introduced which approximate very closely to normal blood serum; one of the best of these is Pachl's solution. Another good solution is that which Messrs. Burroughs and Wellcome supply. The salts are made up in compressed tablets which when dissolved in a pint of water give a physiological solution. Halsted's solution which has been used for a long time in his clinic consists of NaCl, 0·9; potassii chloras, 0·03; calcii chloridum, 0·01; and water, 100. In an emergency the solution made up with common salt is very useful and can be used safely. But I believe that many of the symptoms, such as rigors and sweating, which are occasionally seen after intravenous infusion with a solution of common salt are due to the chemical composition of the fluid being incorrect and whenever possible it is better to use a physiological solution.

It is said that dyspnœa may occur during saline infusion and that it results from excessive dilution of the blood in the lungs. I have never seen this complication though I have seen and done this procedure a great many times. I should very much doubt its being due to the cause stated as it is hardly conceivable that the blood in the lungs can be diluted to any appreciable extent.

As I have already mentioned, there is no object in infusing very large quantities of fluid as after a time the fluid merely escapes into the tissues and produces œdema. The best guide to the amount of fluid which should be infused is the blood pressure which should for this purpose be measured with a sphygmometer. The rate at which the fluid is allowed to flow into the veins appears to be of considerable importance. A too rapid flow is liable to cause unpleasant symptoms. Thus it has been shown by experiment that a rate of flow exceeding three cubic centimetres per minute in a rabbit produces serious symptoms and Bolognesi has said that though there is no toxic dose of artificial serum there is a definite toxic rate of injection.

In collapse following a severe hæmorrhage where the fall in blood pressure is due not to exhaustion of the vaso-motor centres but to failure of the circulation resulting from a rapid and considerable loss of circulating fluid, intravenous infusion of normal saline solution is by far the best and most efficacious remedy. It directly treats the cause of the

condition since it supplies fresh fluid to the circulation in the place of that lost. It is true that though we can in this way replace the amount of fluid lost and so re-establish the pressure, we do not replace the corpuscles and so leave the blood much thinner in many of its essential elements. In practice, however, this is of comparatively little consequence. It has been proved that serum alone and even physiological salt solution is capable of taking up oxygen in the lungs and of giving it off to the tissues, so that the circulation can be maintained, even though half the blood in the body has been replaced by physiological salt solution, at any rate in animals. Zachrisson has demonstrated that an animal can be restored to life by saline infusion after a quantity of blood not exceeding 3 per cent. of its body weight had been removed.

As I have already shown, in shock the rise of blood pressure following saline infusion is not sustained but the blood pressure soon falls again to its former level. In the collapse following hæmorrhage, on the other hand, the rise in blood pressure resulting from saline infusion is sustained. The value of saline infusion in the treatment of collapse following extra-vascular hæmorrhage is supported by abundant clinical proof. On one occasion I had an exceptional opportunity of testing its value in collapse of this nature. The patient was a man of about 30 years of age who was operated upon for Jacksonian epilepsy. A large portion of his skull was removed for the purpose of exposing the Rolandic area of the cortex. Before the dura mater had been opened, however, furious venous hæmorrhage occurred from the diploic veins. For some time all attempts to control the hæmorrhage were unavailing and it was not stopped until a very large quantity of blood had been lost and the patient had been reduced to an almost moribund condition. He was quite pulseless, stimulants had no effect, he was quite unconscious, and death seemed imminent. Nearly four pints of saline solution were infused into his veins with the result that he immediately regained consciousness and his circulation was re-established. His blood pressure did not again fall and he completely recovered and beyond a certain amount of anæmia which persisted for a week or two his circulation was entirely restored.

In cases of collapse due to sudden inhibition of the functions of the vaso-motor centres such as follows blows upon the genital organs or in the splanchnic area or any other violent afferent nerve stimulus, saline infusion is often effective, though not to so marked an extent. Here it is the loss of peripheral resistance that is the cause of the condition and saline infusion can only affect this indirectly.

The treatment of shock by intra-abdominal infusion of salt solution.—The method of treating shock occurring during an abdominal operation by the introduction of large quantities of water or saline solution into the peritoneal cavity has long been practised by many surgeons. It was first described in a paper by Lawson Tait in 1887, though Keith and others had undoubtedly practised it many years before this. When we remember the great surface area of the peritoneum and its great power of absorption it is at once obvious that it is a most effective method of introducing water into the circulation.

A great deal can be done to ward off shock or to treat it if present by frequently irrigating the peritoneum during an abdominal operation; or even by simply filling the abdominal cavity with water or, better still, saline solution just before closing the abdominal wound. It raises the blood pressure in exactly the same way as does intravenous infusion. The best solution is a sterile physiological salt solution at a temperature of from 104° to 108° F. There has been a considerable amount of discussion as to whether it is justifiable to use this method in cases where septic peritonitis or other septic conditions are present. Greig Smith advocated it in all septic conditions; the majority of surgeons, however, have condemned it in septic cases on the grounds that it diffuses the septic material and results in infection of a wider area. This view seems at first to be correct but recent researches have shown many reasons why this view is not tenable. Thus Clark and Norris have proved that flushing the peritoneum with saline solution causes a marked increase in leucocytosis, both during and after the operation. They carried out a series of experiments to test whether the introduction of saline solution into the abdominal cavity increases the danger of septic infection or otherwise. These results show that far from increasing the dangers of infection it minimises them. They injected animals intra-abdominally with one cubic centimetre of a bouillon culture of a streptococcus and 100 cubic centimetres of saline solution. Control animals were injected similarly with one cubic centimetre of the bouillon culture only. All the control animals died, the average length of life being 13 hours. Of the experimental animals 44 per cent. lived and of those that died the average life was 88 hours. This certainly proves that dilution of the septic material greatly minimises its power of damage to the peritoneum. Salieri in 1902 proved that the resisting power of the peritoneum could be increased by injection of normal salt solution. More recently Mikulicz and Miyoke have proved that the resisting powers of the peritoneum can be greatly increased by the production of leucocytosis. Mikulicz in his Cavendish lecture states that the intraperitoneal injection of normal saline solution gives rise to a marked hyperleucocytosis in the peritoneal transudate. There can, I think, therefore be little doubt that intra-abdominal infusion is not only safe but advantageous, apart from its action upon the circulation in abdominal operations where septic processes are present. As shock is perhaps most often seen in abdominal operations performed for conditions where sepsis is present I believe this to be a point of no little importance in the treatment of shock by this method.

Rectal infusion of saline enemata.—Rectal enemata of saline solution have a more limited range of usefulness than intravenous infusion. In cases of severe shock where the circulation has almost failed the fluid is not absorbed into the circulation fast enough to be of service, as there is not sufficient circulation to carry it into the great vessels. It is, however, a very useful method in the early stages of shock and as a preventive method.

Subcutaneous infusion.—This method is much more popular on the continent than it is in this country. It has no advantage over intravenous or rectal infusion and has additional disadvantages. Enough fluid to be of any practical utility can seldom be introduced rapidly and unless the circulation is fairly efficient the solution is only very slowly absorbed or not at all. And in addition the injection of so much fluid under the skin is often very painful.

The treatment of shock by raising the peripheral resistance with drugs.—The morbid physiology of shock teaches us that the essential factor in the production of the great fall in blood pressure which occurs in shock, and which is the cause of the condition, is the loss of peripheral resistance in the circulation and that this is due to a general vaso-dilatation from loss of control by the vaso-motor centres. It is at once obvious that if we can find a means of causing constriction of the peripheral vessel and so raising the blood pressure independently of the vaso-motor centres we shall have an effective means of treating shock. There are several drugs which cause peripheral vaso-constriction and so raise the blood pressure independently of the vaso-motor centres. The most important of these are suprarenal extract and its derivatives, especially adrenalin and hemisine, and ergot. These drugs act directly upon the walls of the blood-vessels, causing vaso-constriction, and a very considerable rise in the blood pressure follows their administration. These drugs, in fact, afford us a means of artificially increasing the peripheral resistance to an almost unlimited extent whatever be the condition of the vaso-motor centres. Adrenalin will raise the blood pressure in all conditions of shock when the vaso-motor centres are completely exhausted and even when they are destroyed.

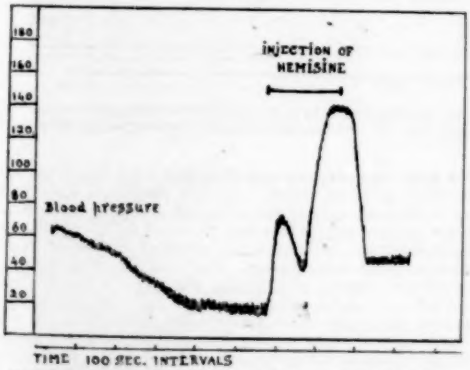
The action of adrenalin in raising the blood pressure was first demonstrated by Oliver and Schaffer. They showed by experiments upon dogs and rabbits that the intravenous injection of adrenalin is followed by a very great rise in the blood pressure, this rise occurring after a latent period of about 20 seconds. The rise in the blood pressure was not sustained for more than a few minutes. If, however, the weak solution of the extract was allowed to flow into a vein the blood pressure rose and remained at a high level for as long as the flow was continued. Gattliel confirmed these experiments upon rabbits and further showed that intravenous injection of the extract of suprarenal gland would raise the pressure considerably above the normal in animals in which the blood pressure had been artificially reduced previously to the injection and that in these circumstances the pressure was sustained for a longer period than in the normal animal. Muhlberg and Miles injected adrenalin intravenously into rabbits whose blood pressure had been greatly reduced from vaso-motor exhaustion following the administration of ether. They found that a very great rise in blood pressure followed the injection which persisted for a few

minutes, the blood pressure then falling again to the original level.

Crile has confirmed these experiments upon dogs and has shown that adrenalin is able to raise the blood pressure under all conditions. It raises the blood pressure in profound shock just as easily as in the normal animal. If the medulla and the spinal cord of an animal are cocainised, adrenalin will still raise the blood pressure. When the splanchnic nerves are divided or the cord is divided, or even when the medulla is destroyed, this rise in blood pressure still takes place. An animal that had been apparently dead for 15 minutes from the discharge of an electric current was resuscitated by the intravenous injection of adrenalin, combined with rhythmic pressure upon the heart and artificial respiration. In one experiment Crile kept a decapitated dog alive by intravenous infusion with adrenalin and artificial respiration—that is, the animal was alive in the sense that its heart continued to beat during that period. These experiments show that the action of adrenalin in raising the blood pressure is quite independent of the vaso-motor centres in the medulla.

Unfortunately, adrenalin is very rapidly oxidised by the tissues and its effects are fleeting. Injected intravenously its effects last from two to five minutes so that to be used effectively for raising the blood pressure it is necessary to administer it by continuous intravenous infusion. Administered in this way the blood pressure can be maintained for a very considerable time at almost any desired height when the vaso-motor centres are completely exhausted or even destroyed. It is in many ways unfortunate that adrenalin has to be administered continuously in order to obtain the best results. Hemisine is a similar drug to adrenalin and is in some ways more convenient as it is put up in tabloid form. I have tried administering hemisine in various ways to see if its action could be prolonged. I have tried giving it per rectum, by the mouth, and subcutaneously; except intravenously administered, however, it has but little effect upon the blood pressure. This is probably due to its local action upon the blood-vessels preventing it from being absorbed into the circulation. Injected intravenously in weak solutions in the human subject it causes a great rise in the blood pressure (see Fig. 13). A weak solution poured into the peritoneal cavity during an abdominal operation upon a child at a stage when the child was suffering from a considerable amount of shock caused a rapid rise in the blood pressure and allowed the operation to be finished and the child to be

FIG. 13.

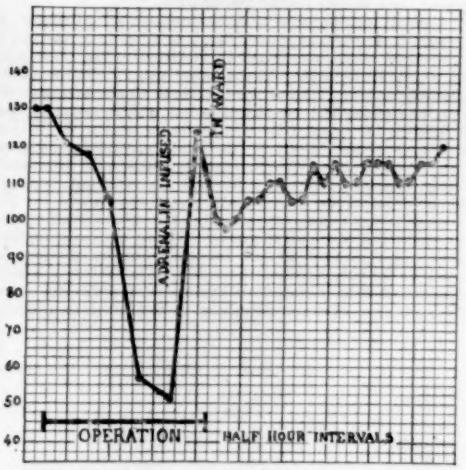


The effect of hemisine in raising the blood pressure in shock. The animal had previously been reduced to extreme shock by destruction of the brain and the medulla and exposure of the peritoneum. The drug was injected at the rate of 2 cubic centimetres per minute; the flow at first was too slow and the upward curve is therefore irregular.

got back to bed without any further signs of dangerous shock developing (see Fig. 14). Crile records the case of a patient dying from shock who was kept alive for eight hours by the administration of adrenalin.

Craig of Columbia reports two cases of surgical shock treated by intravenous saline infusion with extract of suprarenal gland. The first case was one of compound fracture of the elbow caused by a gunshot accident. The patient was pulseless, cold, and suffering from a severe degree of shock. Saline infusion with a solution containing the extract caused a very favourable reaction. The second case was one of a severe compound fracture of the skull. This was treated in the same way and with equally good results. I know of a number of instances in which cases of surgical shock have been treated by slow intravenous infusion with adrenalin solution and the results have been most satisfactory so long as the infusion was continued but in several of the cases the

FIG. 14.



Blood-pressure chart. A severe abdominal operation on a child during which shock developed. A 1 in 20,000 solution of adrenalin was poured into the abdominal cavity. The patient recovered.

condition relapsed so soon as the infusion was stopped. In no case that has come within my knowledge has any unpleasant symptom developed as the result of the infusion.

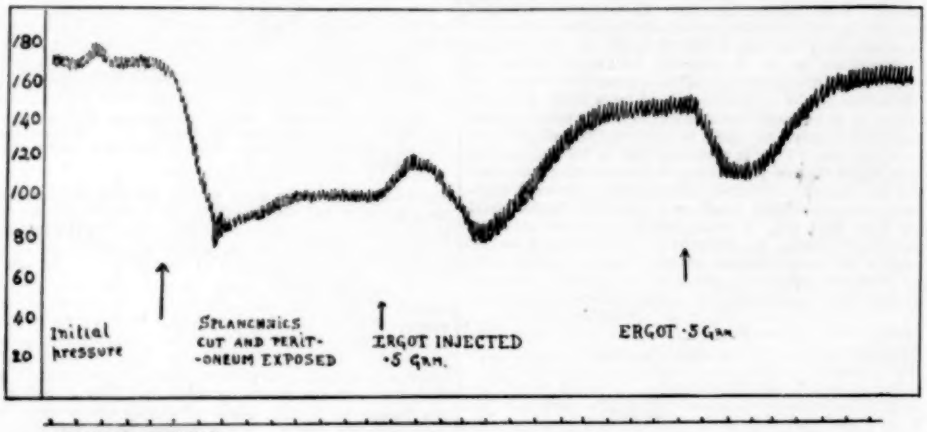
The number of cases in which adrenalin has been used clinically in the treatment of shock are as yet few but I think there can be no doubt that it affords a very valuable means of treating this condition. It gives us absolute control over the blood pressure and enables us to maintain it at or above the normal level for a considerable number of hours when a patient is suffering from profound shock. I believe it affords us a certain means of preventing a patient from dying on the operating table and that it will prove in the future to be the means of saving life in many cases of post-operative shock. When administered intravenously it should be used in very weak solutions. Crile advises that a solution of from 1 in 50,000 to 1 in 100,000 should be used. I have used it in a solution of 1 in 20,000. At first, at any rate, it is not advisable to use stronger solutions. The solution should be allowed to flow into the vein in the same way as in performing intravenous saline infusion. It should, however, only be allowed to flow in quite slowly and its effects should be watched. The best way, of course, is to take repeated measurements of the blood pressure with a trustworthy sphygmometer and to endeavour to keep the blood pressure at about the normal level by varying the flow of the solution as the height of the blood pressure indicates. A very good rough guide, however, to the amount that should be used and the rate of flow may be obtained by feeling the pulse. In cases of abdominal section it can be conveniently used by putting some of the same solution into the abdominal cavity. I have had a special infusion apparatus made for the administration of adrenalin in cases of shock. This apparatus has a reservoir graduated in centimetres and the rubber tubing is closed by a screw-cock; this allows the solution to be infused five cubic centimetres at a time or at the rate of as many cubic centimetres per minute as is found to produce the best results. If strong solutions are used it causes spasm of the heart from direct action upon the heart muscle. Zanewny records a case where 20 minims of a 1 in 1000 solution were injected intravenously. After an interval of nearly five minutes the blood pressure rose to a great height, reaching 230 millimetres of mercury in the course of the next three minutes. This was followed

by a rapid fall, the pulse stopped, there were collapse, vomiting, and delirium, and recovery was not complete for some hours; very serious symptoms in fact resulted, but the dose was most excessive and the fact that death did not result from such a dose shows that the weaker solutions can be used safely. Von Fürth has pointed out that the great rise of blood pressure accompanying its administration might cause apoplexy in persons predisposed to that condition. If used in sufficiently dilute solutions, however, this danger should not arise.

The most serious objection to the use of adrenalin or hemisine in the treatment of shock is that they have to be administered continuously and I have tried to find some other drug which, while acting in the same way, produces a more prolonged result. I have tried various drugs and the one which has given the best results and which seems to solve the difficulty is ergot. By the kindness of Dr. A. Waller, the director of physiology of the University of London, and by the help of Mr. W. L. Symes, who kindly performed the experiments for me, I have been able to test the value of ergot in the treatment of shock upon animals. The experiments were done upon cats. The blood pressure was reduced to the level of shock by division of the splanchnic nerves and exposure of the intestines or by pithing the animal, or by both methods (see Fig. 15). When the blood pressure had been reduced to the level of profound shock, half a gramme of ergot dissolved in five cubic centimetres of salt solution was injected into the jugular vein. The first effect was an immediate slight fall in the blood pressure. This was probably due partly to the cold solution; the pressure then rose slowly and steadily and in about eight or ten minutes had reached a level above the initial pressure. This rise in the pressure was maintained for a considerable time, certainly as long as 20 minutes in some of the experiments. If, when the pressure had reached the high level a second injection was given it again rose to a still higher level. In the pithed animal, whose pressure had fallen almost to the abscissa line and whose respiration had stopped, artificial respiration was supplied and ergot was injected; the blood pressure then rose to over 150 millimetres of mercury and remained at this level for a considerable time (over 20 minutes).

Unfortunately, ergot is a very uncertain drug and attempts to separate its active principles have hitherto been failures. Thus different samples of ergot may act quite differently owing to the fact that they contain more or less of one or other of the active principles. It is to be hoped that in time some one will succeed in separating the blood pressure raising principle of ergot from its other constituents. The preparation of the drug which I have used in most of the experiments is Parke, Davis and Co.'s aseptic ergot. This preparation has the advantage of being sterilised so that it can safely be injected into the veins and its blood pressure raising properties seem to be very fairly constant. The solution used consisted of two grammes of ergot diluted with 20 cubic centimetres of normal salt solution of which from five to ten cubic centimetres were injected at a time. The blood pressure commenced to rise in from 40 to 80 seconds after the injection, the pressure then rose slowly and steadily, the maximum pressure often not being reached for ten minutes or more. The pressure was well sustained at the high level for a considerable time. The injection did not cause any bad effect upon the heart. After a time the heart was slowed but the beats were increased in force and length. Marked and continuous contraction of the circular muscle fibres of the intestine could be seen after the injections. These experiments were repeated upon dogs but without result. Ergot appears to be quite inactive in dogs as no result whatever followed its injection even when very large doses were used. There is very good reason to suppose, however, that the results which follow the injection of ergot in human beings are similar to those which follow its injection in cats. It was found in the experiments that the ergot could not always be depended upon. Thus on one occasion an injection of ergot would be followed by a well-marked rise in the blood pressure, while on another occasion an exactly similar dose would produce no effect whatever. I believe this to have been due to variations in the drug, though an apparently identical preparation was used. Some other preparations of ergot which were tried proved quite useless.

FIG. 15.



The result of the injection of ergot upon the blood pressure of an animal previously reduced to shock by division of the splanchnics and exposure of the peritoneum. After a preliminary fall the pressure rose, and after the second injection reached a point equal to the initial pressure where it remained for over 20 minutes.

I think these experiments show that ergot raises the blood pressure by direct action upon the peripheral blood-vessels quite independently of the vaso-motor centres and that the blood pressure can in this way be raised to the normal level again when it has fallen as the result of exhaustion or even destruction of these centres. That the injection of ergot is a valuable means of treating shock is, I think, clearly proved. In an animal whose brain had been destroyed by pithing and whose blood pressure had fallen from 120 millimetres of mercury to between 40 and 50 millimetres of mercury the blood pressure was not only restored to the normal level again by the injection of ergot but was raised to between 150 and 160 millimetres of mercury and kept at about that level until the animal was killed at the end of the experiment (see Fig. 16). In one of the experiments in which the animal had been reduced to a condition of profound shock by destruction of the medulla and division of the splanchnics and whose vaso-motor centres were inactive (proved by the fact that electrical stimulation of the sciatic nerve caused no rise in the blood pressure) the injection of ergot was not followed by any rise in the pressure and, the pressure falling, hemisine was injected but without result and the heart failed entirely. The heart failure was found to have been due to a block in the tracheal cannula interfering with respiration. After the heart had stopped beating for six minutes it was made to beat again by rhythmic pressure and the injection of hemisine solution and the blood pressure

rose to 190. The hemisine injection was then discontinued. The blood pressure, however, instead of falling again, remained above 90 for over 30 minutes as the result of the ergot which had previously been injected. If ergot is injected hypodermically it acts similarly but not so rapidly.

Jacobi has investigated the action of a derivative of ergot which he calls sphacelotoxin. This substance when injected into an animal causes a great rise in the blood pressure from its action upon the walls of the blood-vessels, since Jacobi has demonstrated that it raises the blood pressure after division of the spinal cord. The great advantage of ergot over adrenalin is that its action is more prolonged and that one dose is sufficient to keep up the blood pressure for some time and also that it can be used hypodermically and has not necessarily to be infused intravenously. Ergotin I have also tried but though it raises the blood pressure it only does so for about five or ten seconds and is therefore quite useless. Hazeline, which is a useful local styptic, does not seem to have any effect upon the blood pressure when injected intravenously. Piperidine and its alkaloid coniine cause when injected a very great increase in the blood pressure owing to their action upon the peripheral vessels but, like adrenalin, their effect is transient and, moreover, their prolonged administration causes paralysis. Nicotine injected intravenously causes a tremendous increase in the blood pressure and its action is peripheral since the effect is produced even after removal of the spinal cord. Its effects are transient, however, the blood pressure falling to, or even below, the normal again in a few minutes.

It has recently been discovered that the extract of the infundibular portion of the pituitary gland causes, when injected intravenously, constriction of the peripheral arterioles and a consequent rise in the blood pressure similar to that obtained by the administration of adrenalin. Unlike adrenalin, however, the pituitary gland extract causes a rise in the blood pressure which is well maintained. Percy Herring tested it in the frog and found that the constriction of the peripheral vessels persisted for 30 minutes after its administration. There is not at present any commercial preparation of this extract but it seems probable that it may replace adrenalin in the future as its more prolonged action is a great advantage.

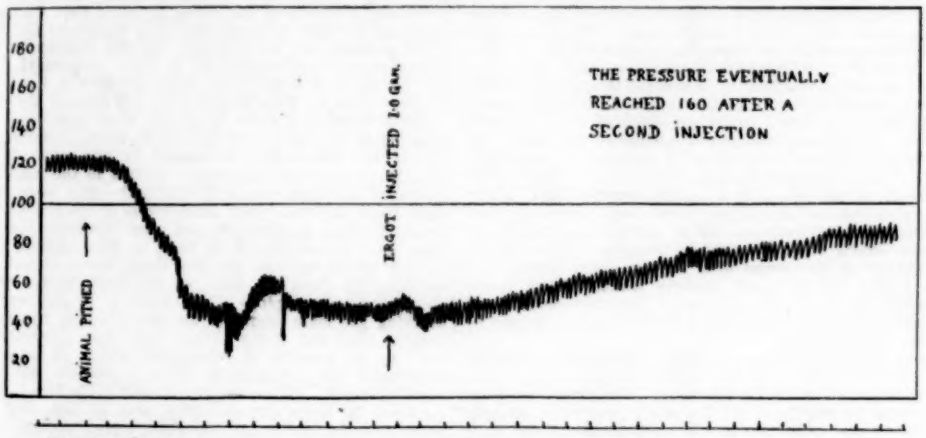
In using any of these drugs for the treatment of severe degrees of shock where the blood pressure has reached a very low level it is absolutely necessary to inject them intravenously diluted with plenty of normal salt solution—that is to say, to administer them as an intravenous infusion—otherwise they do not reach the peripheral arterioles and no result follows their injection. As soon, however, as the pressure has been raised they can be administered in very small doses as they are then quickly swept into the peripheral circulation. It is not possible for a single observer thoroughly to test the value of a new method of treatment for such a condition as shock. Shock is a condition which one does not wish to find and which one takes means to avoid and it is not easy to find bad cases of shock which can be treated by new methods. Cases of shock usually occur unexpectedly and often at most inconvenient times, when it is impossible for the surgeon to watch them himself. It is only by the accumulated experience of many surgeons that such methods of treating shock can be placed upon a sound basis of practical experience.

THE PREVENTION OF SHOCK.

As is the case with sepsis, so also with shock, it is in the prevention of this condition rather than in its treatment that we shall be successful. Shock is much more easily prevented than it is treated once well established. It has been supposed that shock can be prevented by the administration of strychnine during the operation but, as I have already shown, this is not only erroneous but absolutely harmful, as of itself it tends to produce or, at any rate, to increase shock. Brandy and other stimulants are also and for the same reason equally useless. It is a well-known fact, however, that while a single continuous exertion or stimulus causes exhaustion, an intermittent exertion or stimulus causes hypertrophy and increases the resistance to exhaustion. Now though we know that the administration of strychnine in large doses will cause exhaustion of the vaso-motor centres and so produce shock, it seems also probable—nay, almost certain—that the intermittent administration of small doses of strychnine at reasonable intervals should cause hypertrophy and increase the tone of the vaso-motor mechanism, together with all the other nerve centres. We assume this to be true in fact, or why is strychnine used as a tonic? I think that strychnine may be made use of to prevent shock in this way if it can be administered in small doses at reasonable intervals, for, say, a week or ten days previously to an operation, following which shock is feared.

Improving the general tone of the patient's nervous system by a change of air, &c., previously to a serious operation are well known and similar methods of preventing shock and are undoubtedly of considerable value. A great deal can be done to prevent shock by studying the factors in an operation which tend to lower the blood pressure and so to increase or to cause shock and by avoiding or modifying these procedures. One of the most important factors is the anæsthetic. An anæsthetic undoubtedly does much to prevent the occurrence of shock in severe surgical procedures by blocking or minimising the effect of afferent impulses to the central nervous system. It is difficult to prove this as no operation which could possibly result in shock is ever now performed without an anæsthetic (local anæsthesia of course acts in the same way). But before the introduction of anæsthetics shock was much more often seen and was more severe, if one can judge by the results of the operations of those days; though the speed at which they were necessarily done did much, no

FIG. 16.



The effect produced upon the blood pressure by an injection of ergot in an animal reduced to a condition of profound shock by destruction of the brain and medulla.

doubt, to diminish subsequent shock. It is, however, I think, proved conclusively by the fact that severe shock often results from mutilation caused by accidents that would not result, or not to the same extent, if a similar or even more severe mutilation were caused during an operation under anæsthesia. There cannot, I think, be any doubt that other things being equal operations performed under ether anæsthesia are less liable to be followed by shock than those performed under chloroform anæsthesia.

An argument that is sometimes used in favour of chloroform anæsthesia in contradistinction to ether is that hæmorrhage is less profuse and not so likely to be troublesome. The reason for this is, of course, that chloroform causes lowering of the blood pressure while ether tends to raise it. The hæmorrhage can, however, be prevented by careful operating and by the use of local hæmostatics and the prevention of shock is of much greater importance as a rule than the prevention of hæmorrhage. Anyone who takes the trouble of keeping a chart of the blood pressure every few minutes during severe operations will very soon become convinced of the great disadvantages of chloroform as an anæsthetic in these cases. In all severe operations and surgical procedures which are liable to be complicated by shock ether or the C.E. mixture should be used for the production of anæsthesia.

There are certain procedures during an operation which are peculiarly liable to be followed by a sudden fall in blood pressure and these should be avoided. For instance, evisceration. Turning the intestines out of the abdomen during the performance of laparotomy is invariably followed by a sudden and dangerous fall in the blood pressure. This is probably largely mechanical in its action, as it allows of large quantities of blood to collect in the splanchnic area. It is certainly a procedure carefully to be avoided if possible. There can be no possible doubt that the length of the operation is a most important factor in the causation of shock and that the more speedily the operation is performed the less chance will there be of shock resulting. Hæmorrhage, quite apart from its being sufficient to cause collapse, is a most important factor in the course of a serious operation, as if severe it throws a fresh and dangerous strain upon the already overworked vaso-motor centres; this is easily seen in the blood-pressure charts where it will be observed that a severe hæmorrhage in the course of a big operation results in a very marked fall in blood pressure which is but slowly recovered from. Interference with important nerve tracts is another important factor but it can be easily overcome by cocaine nerve blocking.

Keeping the patient warm during operations has always been considered an important means of preventing shock and there is no doubt that it is so. The chief reason for this is that the vitality of all the nerve centres is markedly lowered by any reduction in the temperature of the blood below the normal. The great loss of body heat which results from exposure of the peritoneum during abdominal operations makes it very important that precautions should be taken to keep the peritoneum warm during such operations if any large area is exposed. This may be done by the application of hot sterilised towels to the exposed viscera. But the towels only hold heat for a very short time and changing them as frequently as is necessary interferes with the operation and wastes time. I think the best way of keeping the peritoneum warm is by continuous irrigation with hot water or salt solution. The water should be a few degrees above the normal body temperature, say, 105° F. This has the advantage of preventing any loss of heat while at the same time it is a useful method of preventing shock quite apart from its effect upon the temperature and it does not interfere with the operator. Much, I believe, can also be done to prevent the occurrence of shock by careful attention to the nutrition of the patient. The methods of preparing a patient for operation which are now used, though admirable in many ways, may easily, if overdone, tend towards the production of shock.

The preparation of a patient usually consists in free purgation for a day or two before the operation and in starving him just before the operation. Often the patient is given a very light meal on the evening previously to the operation and nothing on the morning of the operation. This may mean that the patient has not had a real meal for 15 or even 24 hours previously to operation and this, combined with the purging, tends to lower the blood pressure considerably and if overdone may pave the way towards the occurrence of shock. This is most particularly the case with old people and children. Children especially cannot stand starvation even for quite short periods of time and the dangers of shock may be greatly increased if vigorous precautions are taken to prevent post-anæsthetic vomiting by starvation. In cases where shock is one of the dangers of an operation aperients should not be used freely and if it is necessary to get the bowels empty this should be done several days prior to operation. And even at the risk of increasing the vomiting easily assimilated food should be administered to within two or three hours of the operation, so that the patient's vital powers are as high as possible at the time of operation. If the operation is a long one it is a good plan to administer nutrient enemata during the operation or immediately after it. Some form of nourishment should certainly be administered as soon as possible afterwards. Subcutaneous feeding is now a well-established practical method and in certain cases might be made valuable use of.

I believe that the methods of treating shock, such as saline infusion, bandaging the limbs, the administration of adrenalin or ergot, &c., which act by raising the blood pressure, are often not utilised at the time when they can be of the greatest service—that is, at the time when the vaso-motor centres are becoming exhausted and before any real symptoms of shock have developed. Much may be done at this period to prevent exhaustion of the vaso-motor centres by raising the blood pressure. Later, when shock has developed and the vaso-motor centres are exhausted or nearly so, it will be a much more difficult matter to treat it. It is only possible, however, to anticipate shock in this way by having a record of the blood pressure kept during the operation so that the first sign of a dangerous fall in the blood pressure can be detected. At the termination of an operation the application of a tight abdominal binder will do much to sustain the blood pressure and is a good routine measure. This is well shown by some of the charts.

The prevention of shock by cocaine nerve blocking.—If we admit that the shock produced by a severe operation upon one of the extremities is caused by the afferent nerve stimuli reaching the vaso-motor centres in the medulla by means of the main nerves of the limb—and there can be little doubt that this is the main factor in the production of shock in major amputations and other extensive operations upon the extremities—it is then at once obvious that if by any means we can prevent these nerve stimuli from reaching the brain we shall by the same means prevent shock from developing. Crile arguing in this way tried blocking the main nerves of an animal's limb by injecting cocaine into the nerve sheath and then subjecting the limb to an amount of traumatism which he knew from experience was sufficient to cause a marked fall in the blood pressure. He found that no fall in the blood pressure occurred in these circumstances, and, in fact, that if the main afferent nerves of the limb were blocked by the preliminary injection of cocaine, no amount of traumatism to the limb caused any alteration in the blood pressure. Crile and Cushing have used this method of preventing shock in clinical practice and a considerable number of clinical observations have been made demonstrating its value in preventing shock. They have shown that such operations as the quartering operation and amputation at the hip-joint can be performed even upon weakly individuals without any fear of shock resulting provided that cocaine is injected into the main nerve trunks previously to their division. Thus Cushing removed the entire upper extremity with the scapula for sarcoma in a man without any sign of shock resulting by cocainising the brachial plexus previously to its division; while an exactly similar operation performed by him without cocainisation of the brachial plexus resulted in shock so severe that it nearly resulted in the death of the patient. In another case he removed the right leg at the hip-joint in a case of sarcoma in a greatly prostrated young man without any signs of shock either during the operation or afterwards. Crile has reported several similar cases. In one case preliminary cocainisation of the brachial plexus sufficed for an interscapulo-thoracic amputation without a general anæsthetic and no shock resulted from the operation. He has also used preliminary cocainisation to prevent reflex nervous effects in operations for the removal of tumours from the neck where the superior laryngeal nerve was liable to be dragged upon and in operation upon the larynx to prevent reflex inhibition of respiration

Shelton Horsley reports the case of a boy, aged 14 years, whose constitution had been seriously undermined by prolonged sickness and suppuration and who had amputation at

the hip-joint performed without any signs of shock developing after preliminary cocainisation of the sciatic and anterior crural nerves. Before commencing the operation the sciatic nerve was cut down upon and exposed and several minims of a 4 per cent. solution of cocaine were injected into it. The anterior crural nerve was partially infiltrated with a 2 per cent. solution. The amputation was then performed under general anæsthesia. The blood pressure was taken with a sphygmometer at intervals during the operation and at the end of the operation the blood pressure was 120 millimetres of mercury, which was about the normal level for the patient. Recovery occurred without any signs of shock in spite of the fact that owing to the patient's bad general condition previously to the operation a considerable degree of shock was expected.

A case is reported by Hartwell of the Bellevue Hospital of the removal of the entire upper extremity in a man, aged 55 years, for a sarcoma. This method of preventing shock was adopted, 10 or 15 minims of a 2 per cent. cocaine solution being injected into the nerve trunks five minutes before division of the brachial plexus. The condition of the patient was excellent at the termination of the operation and there was no shock. Gessner reports two cases where the shock following a severe amputation seemed to have been prevented by this method. One was an amputation through the thigh; the sciatic nerve was injected during the operation before division. The other case was one of amputation for chondro-sarcoma of the tibia. No shock occurred in either case. In cases of grave traumatic injury to the extremities where shock is present at the time that the patient first comes under observation this method may be of the greatest value. In such cases shock has already resulted from the afferent impulses conveyed to the brain from the injured area. So long as the mangled state of the limb remains afferent impulses continue from time to time to pass by the nerves to the brain; while some of these impulses cause pain, others cause depressor effects upon the vaso-motor centres. And in this way the shock is made worse or caused if not already present.

It is often advised in such cases that the mangled limb should not be removed by amputation until the shock caused by the injury has passed off. The result of this delay is that the causes of the shock continue to operate and in a certain number of cases the patient dies. Delay merely separates those cases where death is inevitable from those which will anyhow recover, while the cases which are on the border line between death and recovery often by delay lose their one chance of recovery. Immediate operation under ether anæsthesia and with cocaine blocking of the main nerves does not in any way tend to increase any shock that may be present from the initial injury but rather tends to lessen it and undoubtedly enables us to save some of the cases which must otherwise die. Such a case of mangling of the arm and shoulder from a railway accident in which cocaine blocking of the brachial plexus was used successfully in preventing further shock from resulting from the operation is reported by Crile. In preventing shock by this method the main nerve trunks may either be cut down upon and injected after the production of general anæsthesia and before commencing the operation, or the nerves may be exposed and injected just previously to their division in the ordinary course of the operation. From five to ten minims of a 4 per cent. solution of cocaine should be used for the injection.

This nerve blocking by cocaine is not the same thing as operating under cocaine anæsthesia. It is used in addition to a general anæsthetic and its object is to prevent afferent impulses from the field of operation from reaching the vaso-motor centres in the medulla. The large nerve trunks of the limb are exposed at an early stage of the operation and cocaine is injected into them. Thus in an amputation of the leg an injection is made into the sciatic and anterior crural nerves before these nerves are divided. In operations performed under cocaine anæsthesia the measures adopted to prevent pain are equally effective in preventing shock. Except as the result of loss of blood shock does not develop in operations performed under cocaine anæsthesia. Operations, however, from which shock is likely to result can seldom be performed under cocaine anæsthesia, as the area involved in the operation is frequently too extensive to be cocainised efficiently without prolonging the operation. In abdominal operations it is not possible to apply cocaine to the peritoneum on account of the large amount of the drug which would be absorbed and which might result in poisoning symptoms. Consequently though pain may be prevented shock cannot be entirely prevented by this means. Clinical experience has shown, however, that abdominal operations performed under cocaine anæsthesia are less liable to result in shock than operations performed in the usual way under general anæsthesia. This is, however, probably in part due to the absence of a general anæsthetic and to the surgeon reducing the amount of his manipulations to the least possible, in order to avoid hurting the patient, factors which all tend to prevent shock.

In spinal cocainisation all afferent impulses from the lower limbs and from the greater part of the abdomen are completely blocked and shock cannot result from operations upon these areas. Spinal cocainisation, however, throws out of action the vaso-motor nerves by which the splanchnic area is controlled. The splanchnic area is consequently no longer under the control of the vaso-motor centres and a great fall in blood pressure results from the loss of blood into this area. Observations with the sphygmometer show that spinal cocainisation results in a considerable fall in blood pressure. In fact, spinal cocainisation itself produces shock quite apart from any operation and many of the bad effects which follow this procedure are in all probability due more to the fall in blood pressure which it causes than in any actual toxic effects of the drug. The method of preventing shock by blocking the main nerves with cocaine is one which should prove of considerable value in many operations where important nerve paths are involved. It enables us entirely to prevent shock in all amputations and might also be valuable in such operations as castration, amputation of the penis, excision of the rectum, and in numerous other operations which are liable to result in shock.

A hypodermic injection of morphine given before the administration of a general anæsthetic decreases the patient's susceptibility to shock during the operation. The action of morphine in preventing shock is probably two-fold; in the first place it enables surgical anæsthesia to be induced and maintained with a smaller quantity of the anæsthetic and in the second place by its action upon the nervous system it diminishes the intensity of many of the afferent nerve impulses reaching the vaso-motor centres as the result of stimulation of the peripheral nerves at the field of operation. Crile found in his experiments that in animals where anæsthesia was produced by the combined action of morphine and ether, there was much less susceptibility to shock than in animals where ether anæsthesia alone was used. And he came to the conclusion that an anæsthesia produced by the combined action of morphine and ether allowed more extensive operations and operations extending over a longer period of time to be performed than would ether or chloroform anæsthesia alone. I have several times observed that patients who had been given morphine for the relief of pain previously to a severe operation for intestinal obstruction or peritonitis seemed to stand the operation better than patients undergoing similar operations who had not been given morphine. All this seems to show that a full dose of morphine given just before the commencement of a severe operation is of value in preventing the development of shock.

SUMMARY AND CONCLUSIONS.

Surgical shock is a condition produced by exhaustion of the vaso-motor centres and the resulting great fall in blood pressure. Collapse is a similar condition caused by lowering of the blood pressure from hæmorrhage or paralysis of the vaso-motor centres. In surgical operations shock most frequently results from operations upon the abdomen, the most important factors in its causation being injury to, or exposure of, the peritoneum, the length of the operation, injury to organs richly supplied with nerve fibres, as the stomach, uterus, and kidneys, evisceration, and extensive and prolonged manipulations. In operation upon parts other than the abdomen the most important factors in causing shock are injury to large or important nerve trunks or injury to parts richly supplied with nerve endings, the area of the wound, the time of exposure of the tissues, and hæmorrhage.

Another important factor in the causation of shock during surgical operations is the anæsthetic. Ether and the C.E. mixture are the best anæsthetics for cases where there is danger of shock, chloroform on account of the fall in blood pressure which follows its administration being very unsuitable for such cases. The time occupied in performing the operation is always an important factor, more especially in children and old people. The condition of the patient prior to operation is important, especially as regards the condition of his nerve centres. In the treatment of shock

stimulants, and especially strychnine, are absolutely contra-indicated as they tend to increase the severity of the condition and to retard recovery. Shock can be produced in an animal by the administration of strychnine alone and it is as reasonable to treat shock by injections of strychnine as it would be to attempt to cure a dying horse by kicking it. The position with the head down and the foot of the bed raised is of considerable value in the treatment of shock and should be more extensively used.

Compression of the abdomen either manually in an emergency or by the application of a tight abdominal binder is a most effectual method of treating shock in all cases. The establishment of an artificial peripheral resistance by the application of external pneumatic pressure affords an absolutely certain method of maintaining the blood pressure, and though not at present a practical method should some day prove of great value. The intravenous infusion of salt solution or physiological serum will raise the blood pressure in all degrees of shock. As a method of treatment in shock it is disappointing as its action is fleeting and it cannot be continued indefinitely. In the collapse of severe hæmorrhage it is effectual and lasting in its effects. The introduction of saline solution into the abdomen at the end of an abdominal operation is a valuable method of combating shock and is not contra-indicated by the presence of pus in the abdominal cavity.

One of the most effectual methods of treating shock that we possess is by the administration of drugs such as adrenalin, hemisine, and ergot which raise the blood pressure by increasing the peripheral resistance independently of the nerve centres. The treatment of shock by the administration of these drugs is as yet in its infancy and only a small number of cases have so far been treated in this way. The experimental evidence is, however, very complete and the few clinical cases where these drugs have been used are very encouraging. The use of these drugs instead of the stimulants which are now so popular, but which have been shown to be useless, will probably result in many lives being saved.

Like sepsis, shock can be prevented much more easily than it can be cured, and as is the case with sepsis so with shock. It is to the careful prevention of shock rather than to its treatment that we must look to get rid of this source of danger in the operations of the future. With the exception of abdominal operations the method of blocking the main nerves with cocaine seems to afford us a ready and most efficient way of completely preventing shock in even the most severe of surgical operations. Morphine, administered both before an operation and afterwards, is a useful aid in the prevention of shock and does not seem to have been used in this connexion as much as it deserves to be. Much may be done to prevent shock by having a chart of the blood pressure kept during all severe operations; procedures which are harmful may thus be avoided, treatment may be commenced at the time when it can be of most value, and, in fact, shock can be thus prevented or treated upon scientific lines.

I believe the best line of treatment in the event of shock occurring or threatening during an operation to be as follows. If the operation is an abdominal one the peritoneal cavity should be filled before being closed with physiological salt solution and if a severe degree of shock is already present hemisine or adrenalin should be added to this solution in the proportion of 1 in 40,000. Whether the operation be an abdominal one or not a firm, tight abdominal binder should be applied at the end of the operation and in bad cases the limbs should be firmly bandaged from the extremities upwards in addition. When the patient has been put back to bed the foot of the bed should be raised at least 12 inches on blocks and all pillows should be removed from beneath the head; the patient should be kept warm and some good form of nutrient enema should be administered and repeated in a short time. No stimulants should be given. A hypodermic injection of aseptic ergot should be given at the earliest sign of shock and repeated if any improvement in pulse tension follows its administration. Except where absolutely contra-indicated an injection of morphine should be given at the end of the operation, whether pain be present or not; and if there is any restlessness afterwards the morphine should be repeated. If, in spite of these measures, the blood pressure remains low and the patient continues in a dangerous condition of shock a solution of adrenalin in physiological salt solution in the proport on of 1 in 20,000 should be intravenously infused at a rate of about three to five cubic centimetres per minute. The intravenous infusion should be continued until on stopping it the blood pressure is found to remain at a safe level. In bad cases it may be necessary to continue the infusion of adrenalin for a long period but it affords a certain method of maintaining the patient's blood pressure and therefore his life.

In collapse following severe hæmorrhage intravenous infusion with physiological salt solution should be performed as soon as possible. The amount of fluid introduced into the veins should be as nearly as possible equal to the amount of blood lost. The subsequent treatment should be the same as for shock. In all forms of sudden collapse, including the collapse of chloroform poisoning, the intravenous administration of adrenalin is of immense value in assisting to restore the patient's life. This drug, by raising artificially the blood pressure, allows the heart and the vital nerve centres to resume their functions very easily. It should prove of great value in resuscitating drowned persons and in other similar emergencies.

I have attempted in these lectures to clear up some of the more debateable points in the causation and treatment of surgical shock and to establish the treatment of this condition on a sound, practical, and scientific basis. There is still much to be learnt and many of the views propounded in these lectures can only become universally accepted after they have stood the test of time and experience. The clinical experience of a few men is not sufficient to establish the value of a new treatment for such a condition as shock and it needs the accumulated experience of many and the searching test of time. I am afraid I have but swept away some of the dust from the doorstep of a great subject but if by so doing I have thrown some light upon the important subject of surgical shock and thereby encouraged others to look further into its mysteries, my labour is not in vain.

PERICOLITIS SINISTRA.[1]

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IN the following brief remarks attention will be specially called to a group of cases, examples of which, not being particularly rare, have probably occurred in the practice of most medical men. Apology is perhaps needed for the title, though it is not mine, but it has the advantage of describing both the nature and the position of the morbid process. In order to indicate the nature of the cases here grouped together it may at once be stated that the condition is like appendicitis or, rather, for the most prominent feature in both is the involvement of the visceral peritoneum, perityphlitis; only it is on the left instead of on the right side of the abdomen.

Like perityphlitis, the cases here grouped together may give rise to different conditions, thus there may be (1) local peritonitis of comparatively slight intensity around the descending colon or the sigmoid flexure; (2) a local abscess in connexion with the descending colon which may eventually burst into the general peritoneal cavity and set up (3) general peritonitis.

1. In the commoner and less severe form the clinical features are often spoken of as fæcal accumulation or impaction and have been described as sigmoiditis or perisigmoiditis. Bittorf[2] described four cases as acute circumscribed sigmoiditis, but since the process is not necessarily confined to the sigmoid flexure the inclusive term of pericolitis sinistra is perhaps more suitable. Hemmeter,[3] however, gets over the difficulty by describing the cases included in the group as sigmoiditis and pericolitis.

The clinical manifestations are briefly as follows. After constipation of some duration the patient experiences pain in the left iliac fossa, usually has a somewhat raised temperature, and may vomit. On palpation there are deep tenderness, muscular resistance, and a more or less cylindrical tumour palpable in the left iliac fossa, features which suggest appendicitis on the left side. Leucocytosis and indicanuria have been noted in some instances (Bittorf). The following is a case of this category:—

CASE 1.—A man, aged 23 years, was admitted into St. George's Hospital under my care on August 18th, 1904, with acute rheumatism. It

[1] A paper read before the Medical Society of London on March 27th, 1905.
[2] Bittorf: Münchener Medicinische Wochenschrift, 1904, S. 147.
[3] Hemmeter: Diseases of the Intestines, vol. i., p. 504, 1901.

is noteworthy that he had been in the hospital with a previous attack of rheumatism also complicated by abdominal manifestations, similar to those described below, in 1902. As the result of treatment the temperature rapidly fell, but after his bowels had been obstinately confined for four days he was seized with abdominal pain in the left iliac fossa, where there were much resistance and an oval patch, three by two inches, of hyperæsthesia. There was no tenderness or pain in the right iliac fossa. The abdomen moved badly and the patient lay with the legs drawn up. Next day the pain was worse and vomiting occurred twice, the pulse was 92, and the temperature was 101° F., but the latter was probably due to a relapse of the rheumatic pains and not to the abdominal condition. On the following day, after the bowels had been freely opened, as the result of enemata, the abdominal pain diminished, and after this, the bowels being kept regularly open, the abdomen became natural.

The symptoms are relieved by removing the fæcal accumulation, preferably by repeated enemata at first, and then by purgatives such as castor oil. For the pain Hemmeter recommends an ice bag in the early stages, followed, if swelling persists for four days, by hot poultices.

I have no data from my own experience to bring forward as to the morbid changes in these cases; it might *a priori* be supposed that fæcal accumulation gives rise to inflammation of the mucous membrane and other coats of the colon, and so by extension to local peritonitis, and that the process is much the same as that described by Mr. W. Arbuthnot Lane[6] in the ascending colon as the result of chronic constipation. Pal,[5] however, regards the lesion as a primary circumscribed inflammation of the mucous membrane of the colon and not as a pericolitis. Rixford[6] has recorded two cases allied to this class in which inflammation of an appendix epiploica was due to infection conveyed from a neighbouring false or acquired diverticulum of the colon. In his cases the inflamed appendices epiploicæ were palpable as tumours, of the size of a walnut in one case and of a hen's egg in the other, and were removed. It does not appear that there were abscess cavities in the inflamed appendices epiploicæ as there were in Mr. J. Bland-Sutton's[7] cases of fæcal abscesses in appendices epiploicæ due to the passage of small but sharp foreign bodies from the colon into the appendices epiploicæ. Rixford's cases suggest that inflammation extending from a sacculus of the descending colon may be the cause of the pericolitis. This explanation would be compatible with the absence of diarrhœa which ordinary inflammation of the mucous membrane of the surface of the descending colon would probably tend to set up, and also with the undoubted fact that pericolitis only occurs in a very small percentage of individuals with chronic and obstinate constipation. In fact, necropsies show how rarely adhesions around the sigmoid flexure and colon are set up by constipation alone. Marked sacculation of the colon is by no means constant in constipation and it is conceivable that it is only in those cases in which sacculation is present that the conditions favourable to the development of pericolitis are satisfied. It is highly probable that this condition may pass into that of the second category in which there is a localised abscess in connexion with the colon.

2. *A localised abscess* in connexion with perforation of a stercoral ulcer, either in a false diverticulum or in the wall of the colon, may be either intra- or extra-peritoneal, and in both cases may extend widely along the side of the colon, thus resembling the spread of an appendicular abscess. The method of formation of this form of pericolic abscess is analogous to that of a localised abscess above a malignant stricture of the bowel. It appears probable from a case recorded by Mayor[8] that a pericolic abscess due to perforation of a stercoral ulcer may discharge into the colon by ulcerating the coat of the colon from without (exogenous ulceration). A fistulous communication between the bowel and the urinary bladder may also be set up. The clinical features of a pericolic or perisigmoid abscess may be difficult to interpret correctly, especially when no definite swelling can be felt and the diagnosis of carcinoma of the colon is very likely to be made when a mass is palpable.

The two following cases illustrate the formation of intra- and extra-peritoneal abscesses respectively in connexion with stercoral ulceration of diverticula in the descending colon.

CASE 2. *Intraperitoneal pericolic abscess.*—A woman, aged 71 years, who had had a femoral hernia for many years, was attacked with diarrhœa a month before her death and subsequently had abdominal pain followed by increase in size of the hernia and vomiting. Herniotomy was performed in St. George's Hospital but it did not appear that there was any strangulation of the bowel. Death occurred a few days later. At the necropsy there was an intraperitoneal abscess to the outer side of the descending colon, the boundaries of the abscess being the descending colon, the abdominal wall, and some coils of the jejunum. There was no general peritonitis but the abscess extended down along the side of the descending colon into Douglas's pouch. The part of the colon in immediate contact with the abscess was œdematous, inflamed, and dilated. The sigmoid flexure was contracted and showed a number of false diverticula, many of which contained rounded fæcal masses. The intraperitoneal abscess was due to perforation of a false diverticulum in the descending colon. No other cause for peritonitis could be found. The vermiform appendix was partially obliterated but otherwise normal. There was a remarkably good pulsion diverticulum of the lowest part of the pharynx; it is interesting to note this association of acquired diverticula of the colon and of the pharynx.

CASE 3. *Retroperitoneal pericolic abscess.*—A woman, aged 47 years, was admitted, under the care of my colleague Dr. F. G. Penrose, who has kindly allowed me to mention the case, to St. George's Hospital on Nov. 28th, 1903, with abdominal tenderness and pain, flatulence, and sickness. These symptoms had been gradually coming on for 18 months but had been more marked for one month. For nine days there had been thrombosis of the veins in both legs. On admission there was abdominal swelling rather suggesting ascites with dulness in the flanks, especially on the left side. On Nov. 30th the patient suddenly became much worse, the abdomen became distended, and the temperature, which had never been below 99° F., touched 102°. This was succeeded by diarrhœa and pain in the left flank. The patient remained very ill and a tumour was felt on the left side which was thought to be connected with the pancreas; on Dec. 18th pleural friction was detected over the base of the left lung, and on the 22nd death occurred, preceded by delirium. The necropsy revealed a large retroperitoneal abscess on the left side extending from the brim of the pelvis to the diaphragm and containing pus and clay-coloured fæces. The descending colon showed towards its lower end three deeply excavated ulcers, two of which opened into the abscess cavity; one of the latter was at the tip of an acquired diverticulum.

If the presence of an abscess is reasonably certain it should be opened. A fæcal fistula, however, may be expected, and in a case recorded by Georgi[9] fatal peritonitis followed exploratory laparotomy on an abscess close to the sigmoid flexure and due to perforation of a diverticulum.

3. Lastly, rupture of a circumscribed pericolic abscess into the general cavity of the peritoneum may occur and set up fatal perforative peritonitis as in the following case:—

CASE 4.—A man, aged 52 years, was admitted into St. George's Hospital under my care on August 14th, 1894, moribund; from his condition and the history obtainable it was surmised that there was acute perforative peritonitis supervening on chronic obstruction probably due to carcinoma of the colon. At the necropsy there was general peritonitis due to leakage of an abscess situated behind the junction of the sigmoid flexure and the descending colon. There were a number of stercoral ulcers in the sigmoid flexure, one of which led into the abscess cavity. There was no new growth in the abdomen and the appendix was healthy.

Stercoral or other kinds of ulcers, such as those due to dysentery, either in false diverticula or in the mucous membrane of the colon may of course perforate directly into the general peritoneal cavity and set up diffuse peritonitis. Beer[10] quotes four cases of perforation of a false diverticulum into the general peritoneal cavity.

Upper Brook-street, W.

[6] Lane: THE LANCET, 1903, vol. ii., p. 1673.
[5] Pal, quoted in Nothnagel's Diseases of the Intestines and Peritoneum; American Translation, p. 930.
[6] Rixford: California State Journal of Medicine, October, 1904, p. 296.
[7] Bland-Sutton: THE LANCET, 1903, vol. ii., p. 1148.
[8] A. Mayor: Revue Médicale de la Suisse Romande, tome xiii., p. 421, 1893.
[9] Georgi: Deutsche Zeitschrift für Chirurgie, Band lxvii., p. 5, 1903.
[10] E. Beer: American Journal of the Medical Sciences, vol. cxxviii., p. 142, July, 1904.

THE VIBRATING SENSATION IN AFFECTIONS OF THE NERVOUS SYSTEM AND IN DIABETES.

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WHEN the foot of a vibrating tuning fork is placed over subcutaneous bony prominences or surfaces in certain parts of the body a peculiar vibrating sensation is felt. If, for example, the foot of a vibrating tuning fork be placed firmly in contact with the ulnar side of the wrist just at the prominence caused by the styloid process of the ulna a peculiar vibrating or trembling sensation is felt at the region named and in many healthy persons this sensation is felt throughout the whole length of the ulna. A similar sensation is felt when the foot of a vibrating tuning fork is placed over the subcutaneous processes or surfaces of many other bones. Attention was directed to the sensation by Egger in France in 1899 and more recently it has been carefully studied by Seiffer and Rydel[1] and by Goldscheider[2] in Germany, by

[1] Seiffer and Rydel: Neurologisches Centralblatt, p. 329, 1903 (Abstract).
[2] Goldscheider: Berliner Klinische Wochenschrift, No. 14, 1904.

Minor[3] in Russia, and by Marinesco[4] in Roumania. To this sensation have been given the names of vibrating sensation, vibrating feeling, and bone sensibility. The sensation is said to be always present in health; it is usually absent when other forms of sensation are lost owing to disease of the nervous system. But it has been pointed out that in tabes dorsalis when ataxia is present the vibrating sensation may be lost, although sensations to tactile impressions, to pain, and to temperature may be preserved.

Space does not permit an account of the observations of others and I wish in this note simply to record the results I have obtained in the examination of a number of cases of nervous diseases and diabetes. I have always employed the *same* tuning fork—a large one about six inches long. (I may point out that the vibrations of some tuning forks are felt much better than those of others and hence there is considerable difficulty in comparing the results of different observers.) At some parts of the body the vibrating sensation is felt much better than at others. For rapid clinical work I have found the following points convenient for examination: the styloid process of the ulna, the internal malleolus, the inner surface and anterior edge of the tibia about the middle of the bone, the anterior superior spine of the ilium, and the middle of the sternum. In all cases examined the foot of the vibrating tuning fork was placed over three regions: the styloid process of the ulna, the internal malleolus, and the inner surface of the tibia about the middle of the bone.

Briefly stated my results were as follows. In 50 healthy men the vibrating sensation was felt distinctly on both sides, in every case at the three regions just mentioned. From these and additional observations which I have made, and from the observations of others, I think we may conclude that the vibrating sensation is always present in health. Of 200 medical patients examined 80 suffered from diseases of the nervous system, 45 from diabetes mellitus, and the rest from other diseases (diseases of the heart, lungs, abdomen, blood diseases, diabetes insipidus, &c.). In the last group of cases the vibrating sensation was always present. If we add these 75 cases to the 50 healthy persons examined we have a total of 125 individuals who were in good health or who did not suffer either from nervous ailments or diabetes mellitus. In all of these 125 cases the vibrating sensation was distinctly felt at the three regions tested.

As regards the 45 cases of diabetes mellitus and glycosuria I was surprised to find that in a few the vibrating sensation was not felt, though sensation to tactile impressions, to pain, and to temperature was normal. The results in these cases of diabetes mellitus and glycosuria were as follows:—

	Cases.
Vibrating sensation felt distinctly at all three points tested in	30
Felt distinctly over the ulna, but very feeble and distinguished with difficulty over the tibia and internal malleolus in	7
Lost over the tibia or internal malleolus in	8

In the last group of eight cases the exact condition was as follows:—

	Cases.
Vibrating sensation lost over the ulna, tibia, and internal malleolus on each side in	2
Lost over the tibia and internal malleolus, but felt over the ulna on each side in	3
Lost over the internal malleolus on each side, lost over the tibia on one side, present on the other, present over both ulna bones in	1
Lost over one tibia and internal malleolus, present on the other side, and over both ulna bones in	1
Lost over the internal malleolus on the left side, felt with difficulty over the inner surface of the left tibia; felt distinctly at the same points on the right side and over the ulna bones in	1

All the diabetic cases in which the vibrating sensation was lost or greatly impaired were mild forms of the disease and all of these patients were over 40 years of age.

As regards the 80 cases of diseases of the nervous system, in 65 the vibrating sensation was normal; in 15 it was lost over the internal malleolus and inner surface of the tibia. Amongst the conditions in which it was present may be mentioned paralysis agitans, idiopathic muscular atrophy, erythromelalgia, epilepsy, neurasthenia, hemiplegia from various causes, sciatica, infantile paralysis, acromegaly, &c. Amongst the 15 cases of nervous diseases in which the vibrating sensation was lost (over the internal malleolus and the inner side of the tibia) other forms of sensation were also lost in five. Especially interesting is the fact that in four early cases of tabes dorsalis the vibrating sensation was lost over the internal malleolus and the inner surface of the tibia but other forms of sensation (to tactile impressions, to pain, and to temperature) were normal. In two of these cases there was ataxia; in two both ataxia and Rhomberg's symptom were absent. In several other cases of tabes there was loss of the vibrating sensation along with impairment of other forms of sensation (to pain or touch).

Also of special interest were three cases of spastic paraplegia in which the vibrating sensation was lost over the tibiæ and internal malleoli but other forms of sensation (to touch, to pain, and to temperature) were quite normal. In these cases there were rigidity of the legs with paresis, spastic gait, increase of knee-jerks, ankle clonus, and extensor type of plantar reflex. One of the three cases was probably due to spinal syphilis in the dorsal region of the cord (Erb's spinal syphilitic paralysis); in the other two there was slight ataxia at the onset (? cases of ataxic paraplegia). In a case of lesion of the pons (? limited softening) the vibrating sensation was lost over the left ulna and over both tibiæ. Tactile sensation was impaired over the left side only but both legs were spastic. In a patient, aged 70 years, who came under treatment on account of "numbness of the left hand," the vibrating sensation was lost over the right tibia and internal malleolus but there were no other signs or symptoms of nervous disease.

From these observations I think one is justified in drawing the following conclusions:—

1. In the normal condition the vibrating sensation, tested in the manner described, is probably always present at the three points mentioned.
2. In early tabes it may be lost in the legs before impairment of other forms of sensation occurs and before ataxia or Rhomberg's sign can be detected.
3. In certain cases of spastic paraplegia it may be lost in the legs when other forms of sensation are not affected.
4. In some cases of diabetes mellitus and chronic glycosuria it is lost when sensation in other respects is normal.
5. From these facts it is evident that sensation cannot be declared to be normal until the vibrating sensation has been tested.

Though the loss of the vibrating sensation is a symptom of considerable interest it is at present too early to say what its diagnostic value will be in the future.

Manchester.

[3] Minor: Neurologisches Centralblatt, No. 4, 1904.
[4] Marinesco: Presse Médicale, August 13th, 1904.

NOTES ON A CASE OF PRESSURE STASIS.

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SURGEON TO THE MEATH HOSPITAL, DUBLIN.

(With Coloured Illustration.)

A MAN, aged 23 years, a fitter, whilst employed in repairs to an electric lift in a large factory got caught beneath the iron counter weight which was descending and an iron bar which ran transversely between the lift guides. The counter weight of over two tons descended on his back, its lower edge, about five inches thick, catching him as he stood upright across both scapulæ; he was doubled down until his bent knees were forced against his chest, his body being prevented from slipping forward by a wire caging and the iron bar beneath him holding his feet. He stated that whilst under the weight he never lost consciousness but became totally blind and remained so until a few minutes after he was released. He heard the men who came to help him talking and repeated their conversation as to what hospital he should be taken to and how. He noticed at once on regaining vision that everything appeared double and that he had dimness of vision in his right eye. He was admitted to the Meath Hospital 20 minutes later and was examined by Dr. W. Boxwell, the house surgeon, and myself. He was in an extreme state of collapse, had a weak thready pulse, and was cold and shivering. His abdomen was quite rigid and hard and his thighs were flexed. He was unable to lie on his back owing to bruising over the spines of the mid-dorsal vertebræ where there was a large effusion of blood. Subsequent x ray examination of his ankles showed that the

internal malleolus of each tibia had been broken off. He had a deep cut on his right shin and a bruise at a corresponding point on the left where the iron bar had met his feet. The most marked condition was that of his face which was quite livid, the colour varying from isolated red points about the forehead and neck to a dusky red in his ears and cheeks. A sharp line of demarcation between the normal and the coloured skin ran across the neck at the level of the thyroid cartilage, coursing upwards to the roots of the hair on the nape of the neck. Two isolated patches of red minute dots existed in front on the left side below the line of discolouration. There was a slight hæmorrhage from his right ear. His eyes each showed slight chemosis commencing at the outer and lower quadrant of the sclerotic; this, together with the discolouration of the tissues around the eye, spread in the following two days till no white was any longer visible in the eyes. The darkening areola round the eyes contrasted strongly with the colour of his face which began to fade rapidly on the second day. It first vanished at the forehead and neck but some red dots showed still, close to the border line. The dimness of vision in his right eye ceased in 24 hours and in three days he had no diplopia and stated that he could see as well as ever. Shortly after the injury he coughed up some blood-stained mucus and for three days had some cough with coarse râles in the chest; this rapidly subsided. There was no evidence of fracture of the ribs or vertebral spines. He was unable to pass urine for the first 48 hours. When first seen, from the rigidity of his abdomen and the collapse it was thought that possibly some rupture of the abdominal organs was present, but after the administration of one-sixteenth of a grain of strychnine, and the placing of hot jars together with pillows so arranged to allow of his very bruised body being comfortable, the shock as well as the rigidity of the abdomen passed off and his pulse never rose beyond 80. Later he was given morphine a few times to relieve the pain in the ankles and shins. One week after the date of injury the colour had subsided very much from his face, except from the conjunctiva and neighbourhood of the eyes, leaving no stain. In ten days the colour of the skin was normal. The urine contained neither blood nor albumin. From the bloody sputa and mucus it is probable that a condition of ecchymosis must have been caused in parts of the lung but so slight as not to warrant a diagnosis of rupture. I am indebted to the house surgeon, Dr. Boxwell, for obtaining for me the water-colour portrait from which the accompanying illustration is reproduced which was executed during the first 24 hours and it shows clearly and without exaggeration the discolouration as then present.

In the April number of the "Annals of Surgery" under the title of "Traumatic Asphyxia" was described a very rare condition due to forcible compression of the thorax and abdomen. A similar case was recently reported from von Bergmann's clinic, Berlin,[1] under the title of "Pressure Stasis." The latter title is obviously a more suitable one as being in accordance with the pathology of the case and descriptive of it, whereas "traumatic asphyxia" has an indefinite pulseless ring about it that might be equally well applied to a number of conditions. In the paper referred to in the April number of the "Annals of Surgery" Beach has dealt very fully with the so far reported cases and with the pathology of the condition. In the last of his cases he excised portions of the discoloured skin and demonstrated that the discolouration is due to mechanical over-distension of the veins and capillaries and not to true hæmorrhage. This he points out bears out the mechanical theory of Hueter and others. While this explanation is true for the greater portion of the face and neck it must be admitted that some of the vessels must have given way or true extravasation have occurred in the lax tissues around the eyes, for here the colour changes and pigmentation took place just as in the familiar "black eye."

The subsequent history of the case here recorded was uneventful and the patient was detained in hospital until his ankles were quite recovered. He was subsequently able to walk as well as ever in spite of the double injury. That such violent pressure exerted on all the large blood-vessels might possibly injure them and so be the starting-point of aneurysm was borne in mind and he was finally discharged from hospital with no apparent trace of the violent crush he had received

Dublin.

[1] Medical Press and Circular, June 28th, 1904.

CARCINOMA OF THE BRONCHUS AND LIVER ASSOCIATED WITH GLYCOSURIA IN A YOUTH.

BY GEORGE HALL, M.B. LOND., B.SC. DURH.,
HOUSE SURGEON AND LATE HOUSE PHYSICIAN TO UNIVERSITY COLLEGE HOSPITAL;
AND
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HOUSE PHYSICIAN TO THE VICTORIA HOSPITAL FOR CHILDREN, CHELSEA; AND LATE HOUSE PHYSICIAN TO UNIVERSITY COLLEGE HOSPITAL.

A YOUTH, aged 17 years, was admitted on August 10th, 1904, into University College Hospital suffering from cough, shortness of breath, and wasting. This cough and shortness of breath first began to trouble the patient in the beginning of May, 1904—that is to say, three months previously to his admission—and at the same time it was noticed that he was losing flesh; his condition, however, did not seem to have been bad enough to cause any alarm. During the next two months the patient became gradually worse and began to expectorate a large amount of frothy sputum which on several occasions was tinged with dark blood. In the beginning of July there was intense irritation of the skin—so severe that the patient often scratched himself until he bled; at the same time his appetite, which previously had been moderate, suddenly became excessive, "unnatural" was the term used, and in spite of it he was getting thinner daily. Some three weeks later he began to complain of great thirst which nothing could relieve and then noticed that he was passing a very much greater quantity of urine than usual. For a few days previously to admission his face and legs became swollen and he looked so ill that he was taken to the Brompton Hospital for Consumption as it was suspected that he was suffering from pulmonary tuberculosis. This disease was excluded as the result of examination and the patient was sent on to University College Hospital for admission. He had had no previous illness, not even any of the usual acute specific fevers, but enjoyed excellent health, playing cricket and football regularly. There was nothing of importance in the family history.

On admission it was seen that the patient was very ill. He was extremely wasted and pale with some slight cyanosis; there was no wandering or loss of consciousness. The temperature was 100·6° F. Both lower extremities were covered with purpuric spots of irregular outline, varying in size from that of a pin's head to that of a threepenny-piece; many of these had broken down and were suppurating. Both feet were œdematous but there was no dropsy elsewhere. In the centre of the back, over the right scapula, close to the anus, and on the left arm were swellings loosely filled with fluid, discoloured on the surface, and somewhat inflamed. The respirations were laboured and rapid (48) and the patient was only able to rest when propped up in the bed. There was a continuous hard cough and he brought up a small amount of purulent sputum stained with blood. On examination of the chest well-marked bronchial breathing could be heard at the left apex and in the second intercostal space on that side there were numerous fine râles; these were the only physical signs obtainable in the lungs but a thorough examination was not made as the patient was so ill. The pulse was 132, full and bounding in character. The heart sounds were normal. The upper limit of the liver dulness in the nipple line was the sixth intercostal space and the lower edge of that organ could be felt one and a half inches below the costal margin; its surface was irregular. The patient was suffering from considerable diarrhœa; the stools were very loose and contained much undigested food. The urine was of specific gravity 1037; it was loaded with sugar and gave a faint diacetic acid reaction with ferric chloride.

A diagnosis of pyæmia was made owing to the presence of fever, the multiple abscesses, and the purpura, but this opinion was rendered unsatisfactory by the fact that there was sugar in the urine. The patient was worse the next day but not markedly so and he did not seem to be in very urgent danger; the pulse was not so good and there was a little more cyanosis. However, about 2 P.M., whilst his bed was

being moved from one side of the ward to the other, he suddenly collapsed and died in a few seconds. Consciousness was maintained till the end.

At the necropsy the condition found was as follows. In the lower lobe of the left lung there was an irregular mass of growth about two and a half by one and a half inches in size. It seemed to originate near the root of the lung and, roughly speaking, to spread down the course of the bronchus of that lobe; it surrounded this structure and in places had invaded and almost occluded it. The lung below was collapsed but the bronchial tubes in this area were not dilated. This mass was adherent to the adjacent part of the pericardium. There were some small deposits in the upper lobe of the same lung but none in the opposite one. There were two small areas of blood-stained infiltration beneath the parietal pleura on the left side but no fluid was present in the pleural cavities. The growth was white and tough on section. In the abdominal cavity there was some blood-stained fluid. The liver was greatly enlarged and weighed 92 ounces, and projecting from its surface were numerous round masses of growth varying in diameter from a quarter of an inch to one and a half inches; none of these masses were umbilicated but the centres of the larger ones were soft. Near the lower edge of the organ was one of the largest of these masses. It was not so regular in shape as the others and its surface was fungating; attached to it and hanging down into the abdominal cavity was a large dark red clot of blood. On section the liver was found to be studded with masses of growth, the smaller being hard and white and the larger soft and breaking down in the centre. The gall-bladder and ducts were normal. Malignant deposits were also found in the retroperitoneal glands and in those of the posterior triangle of the neck. The calvarium contained several small areas of infiltration which appeared both on the inner and outer surfaces of the bone. A very careful search failed to reveal any more growth about the body.

On microscopical examination all the specimens of growth were pronounced by a competent authority to be columnar-celled carcinoma. The pancreas was normal. Thin blood-stained pus was found beneath the areas of discoloured skin above referred to.

In this case there seem to be several points of interest—the youth of the patient and the questions as to which was the seat of the primary growth and whether the glycosuria was due to the accidental association of diabetes mellitus or was due to the presence of growth in the liver. With regard to the former of these questions we are inclined to think that the seat of the primary growth was in the bronchus because the mass of growth in this situation was very much larger than any of the growths in the liver and because the growth in the lung was single (with the exception of one or two very small deposits), whereas the liver was full of disseminated growths of all sizes like the commoner condition seen when that organ is involved secondarily. The presumption is that the dissemination of the growth took place by means of the blood stream and the occurrence of secondary deposits in the calvarium strengthens this view. As to the second point, some evidence is being collected which points to the possibility of glycosuria being caused by various changes in the liver, notably neoplasm and cirrhosis. It is interesting to note in this case that the symptoms usually associated with diabetes mellitus—the large appetite and pruritus—first showed themselves some time after the symptoms due to the growth in the bronchus had established themselves.

A SOLUBLE BUTTON FOR INTESTINAL ANASTOMOSIS.

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ONE of the great disadvantages to the use of mechanical supports in performing intestinal anastomosis is the uncertainty that the support will be discharged after it has fulfilled its function, it being sometimes necessary to perform a second operation for its removal. If a button could be obtained which would be easy to manipulate and which would remain *in situ* for the necessary length of time without, in the meantime, injuring the intestine and then undergo solution the principal objection to this method of intestinal union would disappear. After many experiments I have come to the conclusion that gelatin which has been treated with chrome alum meets these requirements, and this material has the additional recommendation that it can be prepared in such a manner as to be more or less resistant to the action of the digestive secretions according to the activity of these in the part operated upon or to suit the particular purpose which the surgeon may have in view. Buttons made of formalised gelatin have been advocated, but unless these are used simply as a temporary adjunct to stitching, they have to be exposed for such a length of time to the action of the formalin that they become indigestible and thus resemble metal supports.

It is a well-known fact that when chromic acid is mixed with gelatin and exposed to light, or when its salts are so used, the gelatin, after a time, becomes insoluble, even in boiling water. As a result of this treatment, however, the gelatin becomes brittle, especially if it has been kept in a moist condition for any length of time before boiling, the degree of brittleness depending on the strength of the chromic solution or the time that this has been allowed to act. Alum, again, hardens gelatin but not sufficiently to prevent its rapid solution in the intestinal secretions; but if chromic acid and alum be combined, as in chrome alum, both insolubility and hardness are produced, whilst the brittleness resulting from the action of chromic acid alone is diminished. When a strong solution of gelatin is gelatinised and a half-inch cube is soaked for from half an hour to an hour in a concentrated solution of chrome alum and then boiled in water it will be found that the surface remains solid whilst the centre becomes liquid. If a similar cube be left in the alum solution for from 12 to 15 hours and be then boiled the mass will remain solid throughout. If cubes similarly prepared be placed in digestive solutions, digestion proceeds the same in both till the outer layer in cube No. 1 ruptures owing to the liquefaction and swelling of the unchanged gelatin in the centre. This liquid gelatin is rapidly dissolved and nothing remains but the flexible shell which soon crumbles away. In cube No. 2, where the gelatin has been acted on throughout, digestion proceeds slowly till solution is complete, the cubical form remaining almost to the end. The time necessary for solution depends on the strength of the chrome solution used in preparing the gelatin and also on the strength of the enzyme employed. If the chrome solution be weak, digestion takes place comparatively fast, even although the mass of gelatin has been permeated by it, whilst if the solution has been strong and has been allowed to act for a considerable time the gelatin becomes almost indigestible. Thus by varying the strength of the solution or the time that this is allowed to act, or by both these means, almost any degree of insolubility can be obtained, though the stronger the solutions the more brittle does the gelatin become. I have found that the most suitable strength for intestinal buttons is 10 grains of chrome alum dissolved in one ounce of *cold* water. The buttons, which are not unlike Murphy's in shape (Fig. 1), are made

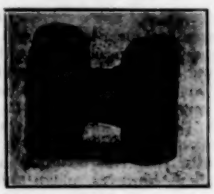
FIG. 1.

by pouring a strong watery solution of gelatin into moulds of suitable size, these having been previously lined with a layer of strong muslin or dressing cloth. This fibrous material becomes saturated with the gelatin and incorporated with the outer part of the button and gives additional strength, whilst at the same time diminishing the tendency to brittleness. When the gelatin has set the casts are removed and are placed in the chrome solution, of which there should be an ounce or so for each button. The length

of time during which they should remain in this depends on the size of the button and also on the degree of insolubility desired, but casts up to three-quarters of an inch in diameter should soak for from 10 to 12 hours, by which time the solution will have penetrated the whole mass. They are then kept in 50 per cent. alcohol till required; the moisture preventing them from drying and so contracting too much whilst the alcohol increases their toughness. It is very important to note that when finished the projection on the male part should fit accurately the opening in the female half so that some pressure is necessary to send it home, and to increase this adhesion it is better to have the tube made slightly oval in section. When this button is exposed to the action of the digestive secretions the gelatin is slowly digested, whilst the small piece of muslin collapses and is voided with the intestinal contents. A button three-quarters of an inch in diameter prepared as described resists solution from five to seven days.

The method of fixing this support is almost the same as that employed in using Murphy's button. A purse-string suture is passed round each end of the divided intestine and the button, which has its halves opened but not quite detached (Fig. 2), is placed in position and the sutures

FIG. 2.



are pulled tight and tied. The two halves are now pressed together and the operation, so far as the intestine is concerned, is complete. If desired a few points of suture may be put in over the support but these are not necessary if the halves fit accurately. Considerable force has to be exercised to detach the parts and this resistance to separation is very soon increased owing to the gelatin expanding slightly. Should the parts not fit tightly the opening in the female half should be smeared with a layer of thick hydraulic dental cement and the ends then pressed together. This cement sets in a very few minutes and firmly solders the button in position. To obtain accurate contact of the peritoneal surfaces of the divided intestine the tube of the button should be wide in comparison with its whole diameter, otherwise the puckering produced by pulling the running stitch tightly round a narrow tube is so great that the surfaces are prevented from coming into close contact.

I have to thank Mr. W. D. Anderson for valuable help and suggestions in moulding and casting the buttons.

Glasgow.

A NOTE ON A CASE OF GRAVES'S DISEASE.

BY W. BLACK JONES, M.D., B.S. LOND., D.P.H.

THE following case of Graves's disease may be of interest. A man, aged 38 years, consulted me in August, 1904. He had suffered from palpitation for six years but had been much worse for 18 months. There was no family history of cardiac trouble. On examination both eyeballs were found to be slightly prominent, the right orbit being higher than the left. The thyroid gland was enlarged on both sides and pulsation was visible in both carotids. The heart's apex was slightly outside the nipple line in the sixth interspace, the cardiac dulness was increased, and on auscultation a soft systolic murmur was heard at the apex and conducted outwards. The pulse was of low tension and irregular; many of the beats were so weak as not to be perceptible at the wrist. The cardiac sounds on auscultation gave 104 beats per minute. The urine was normal. The palpitation caused the patient much discomfort and interference with his business.

The following treatment was adopted. The patient was prescribed a course of the Llangammarch mineral water, a glass to be taken three times daily, and a course of baths, one on each alternate day. He was encouraged to take a moderate amount of exercise, including hill-climbing. He soon began to improve, the pulsations were less frequent and less violent, and soon subsided to 94 per minute. He left after a three weeks' course in much better health.

In March, 1905, the patient reported that he had been steadily improving and that he was quite free from palpitation. He can attend to his business without discomfort, walks several miles a day, and hunts once a week. He had not taken any drugs since he left Llangammarch.

The favourable result in this case, consisting as it does of a disease that is little amenable to treatment, is in my view chiefly due to the balneological methods adopted at this spa. The mineral water, which has been previously described in the columns of THE LANCET, contains among other ingredients chloride of barium. This salt has an action in slowing the pulse similar to that of digitalis and has been shown to be of considerable value in the treatment of various forms of cardiac disease.

Llangammarch Wells.

Medical Societies.

ROYAL MEDICAL AND CHIRURGICAL SOCIETY.

Ankylostomiasis as it affects Miners.

A MEETING of this society was held on March 28th, Sir WILLIAM H. BROADBENT being in the chair.

Dr. THOMAS OLIVER read a paper on Ankylostomiasis as it affects Miners. He said that much of what he wished to say was based upon observations made during his trip to Westphalia and Hungary. Ankylostomiasis, or miners' worm disease, while prevalent in the mining districts of mid-Europe, was known to exist only in one county in England at the present time—viz., Cornwall. It was not known how the malady was introduced into the Dolcoath mine in Cornwall, but as there was a constant stream of miners going there from the colonies and from Europe, Asia, and America, it must have been carried by infected workmen. Considerable uneasiness was being felt in Britain as to the spread of the disease. Ankylostomiasis had already formed the subject of reports to the Home Office by Dr. J. S. Haldane and Dr. A. E. Boycott, and had, in addition, formed the basis of a special inquiry by a committee of the British Association for the Advancement of Science. It was since the opening of the St. Gothard tunnel, 14 or 15 years ago, that Europe had come to realise what a terrible scourge ankylostomiasis was. Although the worm was described by Dubini of Milan in 1841, it was Perroncito of Turin who demonstrated the relationship of the anæmia of the miners at the St. Gothard tunnel to the ankylostoma duodenale. It was until recently believed that the larva of the ankylostoma gained entrance into the alimentary canal by men eating with unwashed hands or by drinking contaminated water, but Looss of Cairo, who accidentally infected himself by a culture, had shown that the larva could penetrate the skin and by a circuitous route ultimately reach the upper part of the small intestine. This mode of entrance was well shown by the lantern slides exhibited. The worm could not reproduce itself in the human intestine. Ova were constantly being passed out of the bowel by the fæces. Under a favourable temperature (62° to 80° F.) and in presence of moisture the ova became transformed into active mobile larvæ. These organisms could live for many months in the wet sludge in the mines. When the larvæ had reached the intestine and had become transformed into the sexually matured worms, male and female, they attached themselves by their hooklets to the mucous membrane of the bowel from which they received nourishment. As several of the ankylostomata, especially the females, often contained blood, miners' anæmia had been attributed to the blood-sucking propensities of the worm but this view was not generally accepted. Looss was opposed to it. The opinion held by Dr. Oliver was that the ankylostomata produced toxins which were absorbed into the

circulation of the host and that these, circulating in the blood, induced changes therein such as were met with in anæmia. That ankylostomiasis had been productive of much harm on the continent was shown by the fact that in Westphalia alone it cost the employers and the Miners' Union £100,000 in two years in their efforts to combat the disease. Dr. Tenholt of Bochum, the medical head of the Westphalian Miners' Union, was directing the sanitary measures which sought to exterminate the disease. At one mine Dr. Tenholt had already had 4000 infected miners through his hands. Two years ago, at the Lothringen pit, near Bochum, 70 per cent. of the men were ill from ankylostomiasis, a few months ago only 8 per cent. In Westphalia the compulsory introduction of water sprinkling into the pits was believed to have caused the rapid spread of ankylostomiasis. Hungarian mines were even worse infected than those of Germany. The present position of the ankylostomiasis question in France and Belgium was discussed by Dr. Oliver as also was the preventive and curative treatment of the disease. Preventive measures could be summed up in cleanliness of the workers, the maintenance of a low rather than a high temperature in the mines, and keeping the pits as dry as possible. As regards medicinal treatment by aperients, also by thymol and other intestinal antiseptics, opinions were at variance. One interesting point mentioned by Dr. Oliver was the toxic effects that sometimes followed the administration of large doses of filix mas, as seen in amblyopia which might be temporary or permanent.

Sir WILLIAM BROADBENT paid a tribute to the great interest of the paper and referred to the thoroughness with which the investigation of this disease had been carried out. The question as to how the anæmia was produced was still unsettled and further inquiry on this point might yield important information on the subject of anæmias generally.

Sir PATRICK MANSON thought it likely that England would at no distant date be invaded by the scourge of ankylostomiasis and that the country might suffer as severely as Germany had done. The disease and its origin only served to emphasise the point that the healthiness of a climate was almost dependent on the presence or absence of parasites. The skin infection and the circuitous route followed by the larva probably allowed the latter to acquire a strong protection against the action of the gastric juice before it reached the stomach and it had been shown that when the parasite was introduced by the mouth it was destroyed by the gastric fluids. In the prevention of the disease a most important point was the education of the miners to a proper knowledge of the methods of infection and of the life-history of the worm. The methods adopted by the Chinese in dealing with fæcal matter were probably effective in preventing the spread of intestinal parasitic diseases. In Sir Patrick Manson's experience thymol never failed to cure the condition but it was most important to give it in large and repeated doses—half a drachm every two hours for several doses. It was necessary to avoid the ingestion of any fluid, such as alcohol, which would dissolve the thymol during the time that the treatment was being carried on. Cases of the disease occurred in Europeans who had lived in the East and were sometimes mistaken for cases of pernicious anæmia.

Dr. OLIVER replied.

MEDICAL SOCIETY OF LONDON.

Pericolitis Sinistra.—Epidemic Infective Colitis.

A MEETING of this society was held on March 27th, Mr. JOHN LANGTON, the President, being in the chair.

Dr. H. D. ROLLESTON read a paper on Pericolitis Sinistra which is published in full at p. 854 of our present issue.—Dr. F. DE HAVILLAND HALL remarked that the cases narrated by Dr. Rolleston did not tend to improve the bad reputation which the large intestine had already established among physicians and surgeons. He was inclined to think that the rheumatic diathesis might play a part in the causation of the first group of cases mentioned and he would like to know whether salicylates had been tried. Dr. Rolleston's second group of cases belonged evidently to a different category in which the inflammation was probably of local origin.—Dr. H. A. CALEY agreed that cases of pericolitis were generally preceded by chronic constipation but there were probably some cases which supervened suddenly as in one which he quoted and which resulted in acute localised peritonitis. He agreed with Dr. Rolleston that most cases of pericolitis of the descending colon originated in the mucous rather than in the serous coat of the colon. He believed that chronic pericolitis was commoner than was generally supposed. Cases were met with in which besides a history of constipation there was an increased resistance or definite thickening in the region of the sigmoid flexure. Simple colitis was, he believed, much more common than ulcerative or perforative colitis.—Dr. E. SYMES-THOMPSON, referring to the therapeutic aspect, said that where there was a tendency to recurrence it was wise to treat the mucous membrane with lubricants, such as vaseline combined with salol, internally.—Dr. ROLLESTON, in reply, remarked that the possibility of rheumatism being a factor in the causation of both appendicitis and pericolitis had often occurred to him and he was inclined to agree with the views expressed by Dr. Hall.

Dr. A. E. CARVER (Torquay) read a paper on a Series of Cases of Acute Infective Colitis. In the autumn of 1902 there occurred at, or were admitted into, the Great Northern Central Hospital, London, a number of cases of acute colitis. Of only ten of the most severe cases was any prolonged record available. Of these, seven were children between one and a half and nine years of age and three were adults. Of the seven children six were females and one was a male. Of the six females five died and one recovered. The male patient died. Of the three adults all were females, of whom two recovered and one died. The disease had certainly occurred more frequently in children and in them it ran a course as follows. The onset was sudden, consisting of violent diarrhœa with the passage of much blood and mucus. The patient was very quiet and after the first 24 hours the face was flushed, the temperature was slightly raised, and the expression was anxious. The tongue was coated with a thick, moist, white fur, the terminal half inch and the extreme edges being, however, clean and red. Abdominal pain was marked but only before and during the passage of a motion. There was tenderness to a varying extent but most constant over the region of the ascending colon. There was not much change till the seventh or eighth day, when the patient began to show signs of exhaustion, and though the motions became of a pasty, fæcal character about the tenth or eleventh day and no blood was passed after that date, the patient gradually sank and died about the fourteenth to the eighteenth day. In adults the disease ran a milder course. Post mortem the following lesions were often found. There was constantly some enlargement of the mesenteric glands. The walls of the large intestine were much swollen from œdema, and scattered over the surface of the mucous membrane were numerous hæmorrhagic points of about the size of a pin's head. There were also very numerous ulcers, shallow as a rule and circular in outline. The rectum was not affected. Microscopically there was loss of tissue in the mucous membrane to a varying extent; there was also a fairly intense small cell infiltration in the submucous tissue and this had extended to a slight degree into the muscular coat. From the manner in which the disease spread it was evidently of an infectious nature and the evidence seemed to point to water as the agent by means of which the infection was carried, although a diminution in the number of cases and an abatement of the symptoms had been observed when the mothers of the children were instructed to boil the milk. The bacillus enteritidis sporogenes (Klein) was constantly present in the stools. The houses from which many of the cases were drawn were densely overcrowded. Treatment was not very successful.—Dr. DE HAVILLAND HALL recalled other epidemics of colitis and the acute colitis associated with Henoch's purpura and other maladies. But the epidemic described by Dr. Carver was of a totally different nature. Here the most striking features were the extreme severity and the high death-rate.—Dr. C. E. BEEVOR had had some of the cases under his care. The most extraordinary features were the rapidity of onset and the rapid and fatal issue.—Dr. E. D. MACNAMARA referred to an epidemic of colitis having specific characters rather than those of true tropical dysentery which he had observed in Manila, the symptoms of which resembled those of the epidemic described by Dr. Carver.—Dr. CARVER, in reply, stated that the death-rate of the severe cases worked out at 60 per cent., but if the milder cases had been included it would probably have been much less.

The PRESIDENT announced that the Fothergillian prize for 1905 had been awarded to Sir Frederick Treves.

CLINICAL SOCIETY OF LONDON.

The Diagnosis of Gastric Dilatation and Gastroptosis by the X Rays.—Stenosis of the Ureter.—The After History of Cases of Enterectomy.—Streptococcal Pachymeningitis.

A MEETING of this society was held on March 24th, Dr. FREDERICK TAYLOR, the President, being in the chair.

Dr. NORMAN DALTON and Mr. A. D. REID communicated a paper on a Method of Ascertaining the Position and Size of the Stomach by Means of the X Rays and a Tube filled with Subnitrate of Bismuth. The method was first used in 1901 but it was only since Mr. Reid had succeeded in photographing the stomach-tube as it lay in the stomach that the results could be recorded and exhibited. The ordinary stomach-tube was passed once a day for two or three days beforehand so as to accustom the patient to its presence in the stomach. The stomach was made empty by washing it out or by withholding a meal. Then with the patient lying on his back the x rays were turned on beneath the couch, an œsophageal tube filled with subnitrate of bismuth being at the same time slowly passed into the stomach, while the epigastrium was watched through the fluorescent screen. The position of the umbilicus was indicated by a fixed metal disc and the curve of the ribs by a metal wire. In a typical case the tube could be seen to emerge from beneath the ribs a little to the left of the middle line and then to descend until it reached the greater curvature of the stomach rather to the left of the umbilicus. Then the point of the tube slid upwards and to the right along the pyloric end of the greater curvature while the stem became convex towards the left. When the point became arrested at the pylorus the rest of the tube adapted itself to the greater curvature, and the photograph of it in that position gave practically the representation of the greater curvature. Lantern slides taken from the photographs were exhibited, showing the tube in various positions in the stomach. In one case the curve and the position of the tube indicated gastroptosis which was verified at a subsequent operation for gastro-jejunostomy. In another case moderate gastrectasis was indicated on the screen and was afterwards found at an operation to be present and to be due to old pyloric adhesions. Subsequent experiments showed that in the cadaver the tube pushed the greater curvature before it, so that the point did not ascend towards the pylorus but remained opposite the umbilicus. It was therefore probable that in an extremely atonic stomach the tube would not pass beyond a point corresponding to the umbilicus. In other cases it had been proved at the operation that the curve of the tube gave a faithful delineation of the greater curvature though no photograph of the tube in a normal stomach had yet been obtained because so much of the stomach was covered by the ribs, the diaphragm, and the left lobe of the liver that the shadow was faint. The method was compared with the injection of air or fluid; it certainly enabled a physician to recommend an operation with the greatest confidence. Mr. Reid made some remarks on the technique of taking the skiagrams. The Crookes's tube was inclosed in an opaque box with an adjustable circular diaphragm placed over a three-inch aperture opposite the anode, the smallest diaphragm being used that would include the required area. When the bismuth tube had been inserted as far as it would go the patient was directed to hold his breath and an exposure of from ten to 20 seconds was made, the plate being placed on the abdomen. The apparatus must be sufficiently powerful to enable a good skiagram to be taken in this time; that used in taking those exhibited consisted of a ten-inch variable primary coil worked off the 100-volt continuous main with an electrolytic interrupter working at 15 ampères on the primary of the coil with either a heavy anode or water-cooled tube.—Mr. LAWRIE H. MCGAVIN queried whether the stomach would not be displaced by the tube in a living person, as it was in the cadaver.—Sir DYCE DUCKWORTH imagined that such displacement would depend on the pressure exerted. He was more doubtful as to whether the tube followed exactly the greater curvature of the stomach.—Dr. DALTON, in reply, said that the stomach wall might be displaced by the point of the tube but could not be displaced when the tube was lying flat and parallel to the wall. No pressure could be exerted on the stomach wall as the tube at once became curved.

Mr. DOUGLAS DREW read notes of three cases of Stenosis of the Ureter upon which he had operated. The first case was congenital narrowing of the upper end of the ureter causing hydronephrosis in a woman, aged 34 years. The treatment consisted of incising the stenosed portion of the ureter and suturing it to the adjacent part of the pelvis of the kidney (pyelo-uretero-plasty) and resulted in complete recovery. The second case, in a woman, aged 50 years, was of a similar nature, but the narrowing affected the upper four inches of the ureter which was exposed. The kidney itself was but little affected although the pelvis contained 25 ounces of fluid. The condition of the ureter was not remediable—at the same time it did not appear desirable to sacrifice the kidney. The ureteral orifice was enlarged as in Case 1, in the hope that it might be enough to cure the hydronephrosis, but within three weeks the tumour made its reappearance. Nephrectomy would be necessary. The third case, in a woman, aged 28 years, was one of pyonephrosis from calculi impacted in the ureter. Nephrotomy and ureterotomy were performed and subsequently nephrectomy owing to stenosis of the ureter. After evacuating the pus from the kidney, as no cause was found in the organ to account for the condition the ureter was exposed and a fusiform enlargement was found upon it one inch from the pelvis of the kidney. On incising this three minute calculi (which were exhibited) were found embedded in granulation tissue lining the ureter. The kidney was drained for three months, during which time no pus was present in the urine, indicating that it was obstructed, and as the sinus would not heal nephrectomy was performed and the patient made a satisfactory recovery. Mr. Drew remarked on the importance of exploring the ureter in cases of hydro- and pyo-nephrosis when the cause of the condition was not found in the kidney.—Mr. A. E. J. BARKER agreed as to the rarity of stenosis in the lower part of the ureter. He had, however, operated on several cases of stenosis in the upper part and had split the ureter from the renal end, but he advocated the passage of a long catheter from the pelvis of the kidney into the bladder so as to maintain a wide lumen.—Mr. W. G. SPENCER asked why the term congenital should be applied where symptoms had appeared so late in life and he suggested the possibility of inflammatory and other causes, especially in women, where the stenosis might be due to inflammation after labour.—Mr. DREW, in reply, justified his use of the term congenital and stated that there was no evidence or history of sepsis in his cases.

Mr. BARKER read a paper on three cases illustrating the Condition of the Small Intestine after Extensive Enterectomy. They showed that the condition of paresis of the intestine commonly seen about an acute obstruction was not completely relieved by the release of the constriction, but might persist more or less for years, a point apparently hitherto overlooked. The first two cases were operated on respectively two and a half years and 21 months before a second operation involving laparotomy had to be done. In both large tracts of small intestine had to be removed and each showed at the second operation that the bowel above the anastomosis had not returned to its normal size or activity as contrasted with the part below the junction. Mr. Barker attributed this weakening and thinning of the proximal portion not only to the distension of the gut above the obstruction but to the saturation of all the coats and nerves with toxins developed in the fermenting bowel contents. The third case, which had been operated on two years before for obstruction, showed the same condition; the obstruction was not relieved but the small intestine was attached to the sigmoid flexure. There was in this case clear evidence of atony of the bowel and thinning of its walls two years later when the second operation was performed.—Mr. J. D. MALCOLM asked whether the existence of a cicatrix in the intestinal wall might not be a cause of distension and paresis owing to its interference with peristalsis.—Mr. SPENCER remarked on the extensive resections (in one case amounting to six feet) which had been performed and advocated bolder and more extensive resection on the proximal side of the injured gut, especially after gangrenous conditions.

Sir DYCE DUCKWORTH and Dr. C. M. HINDS HOWELL communicated a case of Streptococcal Pachymeningitis. The patient, a boy, aged 14 years, was admitted to St. Bartholomew's Hospital on Nov. 14th, 1904, under Sir Dyce Duckworth. There was a history of 18 days' indisposition, with headache and occasional vomiting previously to his admission. The temperature on admission

was 102° F. and the pulse was 90. The patient was very irritable and complained of pain behind the left ear, and the head was drawn down slightly to the left but nothing abnormal was found on examination of the ears. A trace of albumin was present in the urine throughout. Nothing abnormal was noted in the nervous system excepting a diminution of the knee-jerks. On Nov. 21st there was an increased amount of albumin in the urine, with blood and casts, leucocytosis amounting to 15,400 per cubic millimetre, and slight twitchings of the face; the cerebral irritation had increased. On the 24th there were Cheyne-Stokes's breathing, paresis of the right side of the face, and ankle clonus, with Babinski's and Kernig's signs. Dyspnœic attacks followed on the 25th and the pulse became irregular. On the 27th the patient became comatose and died. The temperature between Nov. 14th and 23rd was generally about 103° F., but it fell during the last two days of life. The pulse frequency was about 80 to 90 throughout, only becoming irregular towards the end. The post-mortem examination showed a large quantity of pus over the vertex of the brain, sub dural in position, the pia-arachnoid being natural. The lateral surfaces of the brain were deeply depressed and furrowed from the pressure of the pus, which was found bacteriologically to be streptococcal. Pyæmic abscesses were found in the lungs, the kidneys, and elsewhere. The brain was exhibited.—Dr. DALTON mentioned a somewhat similar case in which the nasal sinus had probably been the seat of pyæmic infection; and Sir DYCE DUCKWORTH replied that the nasal sinuses had not been examined in his case.

CHELSEA CLINICAL SOCIETY.

Chronic Constipation and its Medical and Surgical Treatment.

THE annual clinical debate of this society was continued at the Chelsea Dispensary, Manor-street, King's-road, London, on March 21st, Dr. T. VINCENT DICKINSON, the President, being in the chair.

Dr. W. COLLIER (Oxford) said they certainly saw many cases of chronic and persistent headache the basis of which was constipation. They saw also cases of anæmia kept up by constipation and they came across a great number of patients who suffered from symptoms of both mental and physical fatigue, and those symptoms passed off when they paid due attention to their bowels. So that they had a right to conclude that constipation was the cause of a great deal of ill-health. Another very important point was the question of the frequency of the condition in the female sex above 30 years of age and among the poor; he believed at least two-thirds of those who came for treatment suffered from constipation. Another proof of the extreme frequency of constipation was that they had only to turn to the advertisement sheets of their daily press and notice the enormous number of advertisements of quack remedies. With regard to treatment, they might divide their patients into two classes: those who were able to pay for advice and those who were not. Those who were paying for advice they might treat largely without drugs; those who were not able to pay fees they were compelled to treat very largely with drugs. In the treatment of chronic constipation they had two objects in view, they desired to increase peristaltic action and they also wished to increase intestinal secretion. How best could they increase peristaltic action without drugs? He should say one of the best forms of rational treatment was by voluntary movement. On thinking over that subject he was struck by the fact that for the 20 years that he had been in practice he had had to deal with a very large number of rowing men but he could not remember a single rowing man who had ever come to him to be treated for chronic constipation. Why was that? He thought it it was because of the nature of their exercises. If they thought of the action during rowing they saw what happened. The abdomen was intermittently pressed with a certain amount of violence against the thigh muscles. What was the result? He considered that that pressure led to some forcing of bile from the liver into the intestines and bile was a natural aperient and the pressure further increased the peristaltic action. And not only that, but the rowing exercise undoubtedly strengthened the abdominal muscles and those muscles in their contraction also pressed on the intestines. And there they had the keynote of the matter. They could treat chronic constipation largely by voluntary movement. Of course, they could not send all their patients into boats but they could put them on chairs and induce them to go through the same movements as in rowing. Or they could get them to indulge in other movements, such as the squatting movement; that was to say, rapidly and forcibly dropping on to the knees in a squatting attitude and quickly assuming the erect posture again. That did exactly the same thing—it pressed on the liver and also irritated the intestines. They could easily think of other movements having the same object. One movement he was very fond of was to get a person to lie down and to cross the arms on the chest and then raise himself to the sitting position by the contraction of the abdominal muscles. They came next to the question of manipulation and that brought him to speak of massage. He was bound to admit that he thought there was an enormous amount of humbug so far as the treatment of constipation was concerned in the so-called skilled massage. He was a great believer in irritating the abdomen but he did not think it required any skilled masseur. Turning to the question of diet, he thought that their national diet was extremely bad, it was far too dry, too non-irritating. Not half enough fruit was eaten. Another point of importance which had to be considered was the question of fluids. He observed that because many people took alcohol with their meals, they took it in moderation and hence did not get a sufficient amount of fluid. He always paid great attention to the amount of water taken and he suggested the drinking of water at various times of the day. There was one point about water which they ought to remember and that was that most of the English water contained a large proportion of chalk and that chalk in itself was constipating. Therefore when he prescribed water he always took care to suggest that it should be boiled, for in that way much of the chalk became deposited. It might be necessary to supplement the treatment by the use of drugs. A drug of which he was very fond was one which the late Sir Andrew Clark used largely—namely aloes. He was a firm believer in giving aloes in small quantities often repeated, half or a quarter of a grain of aloine, with sulphate of iron and nux vomica, given twice a day about 5 o'clock and 8 o'clock. If that was not sufficient he often gave colocynth. There were some cases in which they wanted to get the stools of a watery nature and in those cases he was inclined to give sulphate of magnesium and sulphate of sodium. He combined those drugs with the liquid extract of cascara sagrada, half a drachm of each. Next as to the question of treatment of the poor. Why was it that the poor suffered so much from constipation? He thought it was largely due to two causes. First of all to the sedentary habits of the people; and secondly, to the fact that their food consisted very largely of white bread and tea. Tea, of course, contained a lot of tannin and the white bread which was eaten in England was not irritating enough. It seemed a monstrous thing that at the hospitals and in private practice they should be compelled to continue to teach people to swallow drugs wholesale in the way that they did, but he was afraid that they would be compelled to continue to do so unless they could alter the national diet and that was a very difficult matter. They could not order the poor to take green vegetables and fruit because of the expense. There was one suggestion which he had tried to induce his poorer patients to act upon and that was to take olive oil for constipation. Olive oil was a good deal cheaper than cod-liver oil, and he found that if people would only try it a few times they would have no objection to it. He thought olive oil was a valuable aperient. And he would ask why should not they endeavour to get people to cook their food in olive oil? When they went to Austria or Spain or Italy they found that nearly everything was cooked in oil, why should not the people in England cook with oil? The probability was that if they adopted that course they would do something to get rid of that national disorder. In treating constipation among the poor it was quite impossible to find time to give them individually the hints he had referred to, and, moreover, he felt quite sure that if he did they would not pay attention to them. Poor people did not care so much for their advice as for their drugs. With regard to the question of an enema, of course, in a troublesome case an enema or two were given, but he had not had much experience of treating patients with enemas over any considerable period. He thought the objection to the enema was that there were a great deal of discomfort and a good deal of time taken up in giving it, and if they could get the bowels to act in other ways it was better for the comfort of the patient The only other

remark he would make was with regard to the suggestive paper by Mr. Lane. He had read that paper with great interest and it certainly, to his mind, would add to their interest in the post-mortem room. He had never had those changes to which Mr. Lane referred pointed out to him before and in the future in examining the dead body of a middle-aged person they would be looked for. Certainly the suggested operation would have the most stimulating effect upon physicians and general practitioners, because it would impel them to a more active treatment of chronic constipation, they would want to preserve their patients from that fate. They would also be able to lift the warning finger to patients and say that if they did not carry out their instructions then their fate would be that they would have to hand them over to the surgeon and that a considerable portion of the large intestine would be put completely out of court.

Dr. F. J. SMITH said he claimed to have had some experience in the appearances of the abdominal viscera after death but he had never seen the anatomical condition described by Mr. Lane. He disagreed with Mr. Lane's statements in regard to the position assumed by the appendix but agreed with him on physiological points and held with him very strongly that chronic constipation led to symptoms which might in their turn lead to an unendurable continuance of life without relief. Modern self-consciousness and neuropathy combined with the skill of modern surgeons and the enormously reduced mortality of abdominal operations might possibly have brought many to a position in which they preferred the relief offered at so little risk to a continual worry about their bowels. He felt sure that as Mr. Lane's method of relief became more widely known those numbers would enormously increase. The ease, the safety, and the simplicity of the treatment offered did not, however, forbid them seriously asking themselves the question whether they were justified in too lightly advising a patient to undergo the operation. They should be careful to inquire concerning the operation and its after-effects. Concerning simpler measures for overcoming chronic constipation Dr. Smith advocated the administration of three or four large enemata of soap and water with olive oil daily. He considered that the essential reason why patients drifted into a condition demanding relief by radical measures was that they would not take the trouble necessary to keep free from symptoms. Lest he should be taken to be making undue objection to the method suggested by Mr. Lane, Dr. Smith concluded by narrating a case under his care at the London Hospital in which the patient was willing to take the risks of the operation and he had asked his (Dr. Smith's) colleague, Mr. J. Hutchinson, jun., to see the patient with a view to performing the operation.

Dr. H. CAMPBELL THOMSON limited his remarks to the influences that disorders of the nervous system had in connexion with chronic constipation. He explained how the mental state of the patient entered into the question and discussed the close relationship which existed between paralytic affections of the intestine and the mechanism of secretion. When the paralysis of the intestines was acute, as when, for instance, it was associated with general peritonitis or intestinal obstruction, the secretion was greatly modified both in quantity and quality. He could not say with any certainty exactly what modification was produced where paralysis was less complete and of slower onset, but there could be little doubt that changes did take place and that they were not advantageous to the healthy working of the bowel. The most obvious examples of paralyses of the intestine were seen in the acute cases, some of which, as he had shown elsewhere, might be also associated with acute paralytic dilatation of the stomach, but just as loss of power in a limb might come on rapidly or very slowly according to the cause so might powerlessness of the intestine be found in all degrees of severity and chronicity. In many of the severe and long-standing cases of constipation which medical measures failed to relieve the loss of power might be of such degree and standing that it was practically irrecoverable and it was for such cases as those that the operation introduced by Mr. Lane was likely to be especially beneficial. In conclusion, Dr. Thomson said that he had no desire whatever to place the disordered nervous system as a cause of constipation out of its due proportion, but his object had been to bring it forward as one of the causes which might, if not recognised, sometimes lead to failure of treatment and to such a condition that an operation was at last the only means left by which the functions of the intestine could be restored to health.

Dr. LEONARD WILLIAMS said that to put the matter shortly, operative measures in the treatment of chronic constipation were not justified until a patient had attained to about the age of 50 years. Before that period of life every case of the malady was curable by hygienic regimen and suitable medicinal treatment. After that age the abnormally distended and displaced parts of the abdomen became bound by adhesions into vicious positions and restoration to the normal became impossible without the gentle ministrations of the surgeon and the anæsthetist. The essential factors in the production of any case of chronic constipation were deficiency of fluid in the intestinal tract and inadequate peristalsis. Deficient moisture in the intestines should be met by the proper management of the skin. In discussing the treatment of chronic constipation by partaking largely of foods containing a considerable proportion of indigestible residue, Dr. Williams pointed out that what the intestines in such cases required was not extra work but physiological rest, so that when they did work they might do so to some purpose. He emphasised the importance of maintaining in full working order the muscles which formed the external abdominal wall and he had generally found it necessary to prescribe exercises for that purpose. After explaining the various exercises which he recommended Dr. Williams passed on to discuss the great advantages of the spa treatment in chronic constipation, observing that the best subjects for treatment at those spas were as a rule those who were never sent there from this country at any rate—namely, children. He then analysed in detail the methods in vogue at the different spas and recommended certain prescriptions. The object was to educate the intestines to do their work normally and for that purpose the stimulation must be slight and above all things sustained. He commented on Kussmaul's oil enema method and mentioned that for the habitual constipation which was liable to occur in old age he had found belladonna to be the best remedy; a quarter of a grain of the extract made into a pill with a quarter of a grain of the extract of nux vomica should be given every night until the bowels could be trusted to act without it.

The PRESIDENT briefly thanked those who had taken part in the debate and the proceedings terminated.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

SECTION OF OBSTETRICS.

Procidentia Uteri.—Cleidotomy.

A MEETING of this section was held on March 10th, Dr. ALFRED J. SMITH, the President, being in the chair.

Mr. E. HASTINGS TWEEDY read a paper on a Curative Operation for Procidentia Uteri. He did not believe that any procedure having for its object the removal of the uterus and the entire closure of the vagina provided a sound surgical remedy. He had on three occasions performed an operation that appeared to him on theoretical grounds to fulfil all the requirements of a complete cure in the worst conditions of prolapse. Briefly stated, the operation consisted of opening into the abdomen, both in front of, and behind, the cervix. This enabled the operator to grasp the broad ligaments between the thumb and the forefinger and to protect the ureters and the uterine artery, while the bases of the broad ligaments were denuded by stripping the vaginal mucous membrane of the lateral fornices from them. Ligatures were passed through these structures close to their pelvic extremities and these ligatures when tied together in front of the cervix caused the latter to be elevated in an upward and backward direction. The basal fibrous structures (Mackenrodt's ligaments) were still further secured in front of the uterus in the neighbourhood of the internal os by several fine sutures. The final steps of the operation consisted of amputation of the cervix, anterior vaginal fixation of the uterus, and an anterior colporrhaphy, combined with a Hegar's colpo-perineorrhaphy.—Dr. J. H. R. GLENN said that the original operator passed the stitch through the back of the cervix and drew it upwards and backwards towards the promontory of the sacrum, the fundus falling forwards. An anterior fixation was also done.—Dr. H

JELLETT said that in many cases of prolapse some form of operation was necessary. He was in favour of vaginal fixation and some form of narrowing operation of the vagina. He had no dread of pregnancy afterwards, never having had any trouble. He had lately opened an abdomen in which anterior fixation had been previously done and it had had excellent results. He thought that that operation, combined with narrowing, was usually quite sufficient and if not Mr. Tweedy's operation was an excellent one.—Dr. R. D. PUREFOY said that there was some difference of opinion with regard to the various structures which kept the uterus in position. Dr. Savage had demonstrated that the structures which chiefly prevented procidentia were the utero-sacral ligaments. The procedure which Mr. Tweedy had shown was in certain cases an excellent one but was manifestly not suited to all cases of procidentia. Huguier pointed out that in many cases hypertrophy of the cervix was the cause of procidentia and this could be dealt with by amputation of the cervix.—The PRESIDENT said that he had read the original description of the operation but thought it exceedingly theoretical. He did not see how, in tying the sutures, it was possible to avoid compressing the ureters. He agreed with Dr. Jellett as to the value of vaginal fixation—combined with colporrhaphy—in ordinary cases of prolapse. He had also got good results from abdominal fixation.—Mr. TWEEDY, in reply, said that, like Dr. Purefoy, he had formerly attached great importance to the sacro-uterine ligaments but he had now adopted the view that the ligaments he had pointed out were perhaps of more importance in keeping the uterus in proper position, especially in that of elevation. There was frequently a deep laceration of the cervix in bad cases of procidentia and in such cases Mackenrodt's ligaments were probably torn.

Dr. JELLETT showed an infant on whom Cleidotomy had been performed in consequence of impaction of the shoulders at the pelvic brim. After the operation traction still failed to effect delivery and so the posterior muscular attachments of the scapula were divided. This enabled the whole scapula and shoulders to move forward on to the chest and delivery was then easily accomplished. The fœtus measured 45 centimetres round the shoulder girdle with the shoulders in their normal position and 34 centimetres when compressed after the division of the bones and soft parts. He considered that the use of the blunt hook was difficult and dangerous. In performing the cleidotomy he spent about three minutes over each clavicle and about five minutes in separating the posterior attachments of the scapula. There was no bruising of the maternal parts and the mother's life was never in danger. It did not occur to him to rotate the body, but probably he would have done so if he could have got at the body. It might have brought about the same result as the division of the scapular attachments. The period of gestation seemed in this case to have been prolonged.

EPIDEMIOLOGICAL SOCIETY.—A meeting of this society was held on March 17th, Dr. B. A. Whitelegge, the President, being in the chair.—Dr. A. E. Boycott read a paper on Ankylostomiasis. Some points in the life-history of the parasite were still imperfectly understood but enough was already known for practical purposes. It differed from most in having no "intermediate host" and each species was infective to one animal only, and this only at one period of its saprophytic development, while there was no sexual generation outside the host. One species only, ankylostoma duodenale, attacked man in Europe and Africa, and though Stiles had described an ankylostoma Americanum as a distinct species the differences were but small. The worms were found in the upper part of the jejunum in man in numbers varying from a few to several hundreds, where the female laid numerous eggs easily detected in the fæces. Hatching within 24 hours they passed through three moultings in the course of a week, developing a well-marked chitinous sheath. It was still a sexless larva but had reached the stage of "encapsulation," in which alone it was infective, the eggs or younger larva being swallowed with impunity. So soon as the full-grown larva gained access to the human bowel it underwent rapid development, acquiring, after a renewed series of moultings, male and female sexual organs in different individuals. The larva attained its full growth in about five days and the second period of growth from the encapsuled larva to the reproductive stage occupied about as many weeks, though the encapsuled larva and the perfect worm were each capable under favourable conditions of retaining their vitality for months or even years. In the great majority of cases the larvæ gained access to the intestine of the host per os but the possibility of their penetrating the skin had been established by recent observers. The optimum temperature for incubation and the development of the larvæ was about 24° C. = 75° F., the limits being about 16° C. = 61° F. and the temperature of the blood, but the encapsuled larvæ would live for months at any temperature between 10° and 30° C. Drying and submergence were alike fatal to the eggs but the larvæ required water and while young the presence of oxygen, the absence of which explained their inability to develop in the alimentary canal. The encapsuled larva was, however, capable of living and moving actively for days or weeks in an atmosphere of hydrogen or nitrogen or in vacuo. Their alleged resistance to chemical reagents was apparent only and owing to the protection afforded by the chitinous sheath, for young larvæ were very easily killed and with the encapsuled it was determined not so much by the strength of the solution as by the time required for the penetration of the sheath. The adult larvæ were surely killed in four hours by 0·1 per cent. of sublimate, 0·25 per cent. of izal, or 1·0 per cent. of carbolic acid, and in 24 hours by 4·0 per cent. of sodium chloride or 0·1 per cent. of izal. Some fæces appeared to contain something that inhibited the development of the larvæ, though the eggs were present in great numbers. It was not their chemical reaction and they contained very little soluble salts. Bruns found that the more he diluted the fæcal matter the larger was the percentage of the larvæ reared and aqueous extracts of some fæces would kill the larvæ hatched from others. The essential symptom of ankylostomiasis was anæmia, varying from a reduction of 10 to 20 per cent. in the capacity of the blood for absorbing oxygen to a degree equal to that of the worst cases of pernicious anæmia and, of course, fatal. The direct mortality was considerable but the chronic ill-health and incapacity for work through weakness and dyspnœa were of even greater economic importance. Some men seemed to enjoy a sort of immunity or "impunity," harbouring the worm but presenting no symptoms, though none the less a danger to others. The incidence on the exposed population varied from 2 or 5 per cent. to 75 per cent. in parts of Assam and 100 per cent. in some Cornish mines. The severity of the symptoms depended not so much on the number of the parasites as on their toxicity and this, again, on their more or less favourable surroundings, as moisture and temperature. Thus the Westphalian coal miners were comparatively free until irrigation was introduced with a view to prevent explosions of coal-gas and, on the other hand, the Levant mine in Cornwall, though warmer and filthier than others, was almost alone in its exemption, the floors and walls being saturated with the salt water soaking through the roofs of the galleries running under the sea. They knew enough now to enable them to exterminate this pest from climates where the requisite temperature was met with only in mines and tunnels at great depths, since reproduction was impossible outside of the body and the hatching and growth of the larvæ were equally so within. It was always in their power to expel the parasites by *large* doses of thymol repeated until the eggs had disappeared. In mines and similar places the larvæ would die out spontaneously if not reintroduced and the extinction of those already there could be facilitated by free irrigation with disinfectants. But the most important measure was the prohibition of defæcation except into vessels provided and charged with disinfectants. This, with the medical treatment of men found to be already suffering, had completely saved the workers in the Simplon tunnel from the terrible sufferings of those engaged on the St. Gothard 20 years before and had reduced the percentage of infected men in the Westphalian coal mines from 20 to 3·6, but there was everywhere a residuum of men whom no regulations could coerce and in some places, as the Cornish mines, it was useless to attempt it. In tropical countries, with high temperatures on the surface, the disease was very prevalent, though hitherto unrecognised, and the work of prevention hopeless. Only in the year 1900 did Ashford show that the "anæmia" certified as the cause of 24 per cent. of the deaths in Puerto Rico was due to ankylostomiasis and last year Haldane did the same for the "Dolcoath anæmia," known in Cornwall since 1894 but hitherto unexplained.—In the discussion that followed Sir P. Manson said that in Ceylon the disease was more fatal than cholera and that most tropical anæmia was of the same kind. He believed that the larva entered the body through the skin,

especially among people who habitually walked barefooted. He had found calomel a valuable anthelmintic.—The President remarked that though as yet unknown in the coal mines of Wales and Yorkshire it had recently appeared in those of Lanark.—Dr. Boycott in his reply stated that in several alleged instances of reproduction out of the body that had been brought under his notice other nematoids had been mistaken for these. In experiments *in vitro* dead larvæ were digested but living ones resisted. The anæmia was due to the toxins, not to any "blood sucking" or destruction of the corpuscles by the parasites. Thymol was incomparably the best anthelmintic, though beta naphthol was very good.

SOCIETY FOR THE STUDY OF DISEASE IN CHILDREN.—A meeting of this society was held on March 17th, Dr. L. G. Guthrie being in the chair.—Dr. O. F. F. Grünbaum showed a boy, aged nine years, with Alopecia Universalis. The hair of the head came out in patches two years ago, complete baldness resulting in one year. Then the eyebrows and most of the eyelashes seemed to fade away. The nails were normal. No cause was found.—Mr. G. Pernet recommended liberal diet, tonics, thyroid extract, and stimulating lotions.—Dr. R. Hutchison exhibited a case of Late Rickets in a boy, aged nine years. For some months the legs had been gradually bending. There was marked epiphyseal enlargement of the lower ends of the radius and the ulna, of the knees and the ankles, with typical rickety curvature of the femora and the tibiæ. The skull, the chest, and the viscera showed no changes. The boy had rickets at the age of three years and had never completely recovered from it.—Mr. Sydney Stephenson showed a boy, aged nine years, with Tuberculosis of the Lacrymal Sac. Tubercle bacilli were found in scrapings from the interior of the diseased sac. There was a family history of tuberculosis. The boy had had enlarged cervical glands treated by operation and still presented chronic ulceration of the nasal chambers, probably tuberculous.—Mr. Stephenson also showed a typical case of Keratomalacia in a girl, aged eight months. The condition was one of sloughing of the cornea in a young child suffering from marasmus. It was rare in England. It corresponded with "Hikan," an epidemic disease of Japan; with the ophthalmia Braziliana of South America; and with the destructive keratitis common in Russia during the great Lenten fast. The eyes were kept shut, there was no discharge of muco-pus, and both corneæ were converted into greyish-white sloughs.—Dr. J. Charlton Briscoe showed a girl, aged 13 years, with Tremor of the Right Arm, very rapid, better felt than seen. It was absent during sleep, was constant while awake, increased after exertion, and diminished after rest. The muscles of the forearm and hand were not involved. No other change in the nervous system was found. The onset was sudden, three months ago, with anorexia and lassitude.—Dr. Guthrie suggested that the condition was due to a mild encephalitis or thrombosis of some of the finer vessels of the cortex on the left side.—Dr. G. A. Sutherland thought the condition "functional," a diagnosis with which Dr. Briscoe agreed.—Dr. F. Parkes Weber showed a child, aged 12 years, with Jaundice and very considerable Chronic Enlargement of the Spleen. The lymph glands were not enlarged and the blood showed nothing abnormal. The mother had had six stillborn children.—Mr. J. Howell Evans showed a case of Osteoma of the Bregmatic Wormian Bone.—Dr. G. S. Hett showed a case of Tuberculosis affecting the Lungs, Cervical Glands, and Ears.—It was discussed by Mr. H. L. Carre-Smith, Dr. Sutherland, Mr. Howell Evans, and others.

ERRATUM.—In the report of the last general meeting of the British Laryngological, Rhinological, and Otological Association published in THE LANCET of March 25th the first specimen exhibited was said to be shown by Dr. Samuel Bradford. These words were a misprint for "Dr. Samuel Lodge of Bradford."

LEICESTER INFIRMARY.—On March 22nd, in the presence of a large and representative assembly, the Marchioness of Granby opened the new out-patient block of the Leicester Infirmary. The waiting hall of the new building is 85 feet long by 29 feet wide and around it are grouped the physicians' and surgeons' consulting rooms, examining rooms for males and females, and a small room for minor operations. A room is also provided for ear, throat, and dentistry cases, with dressing rooms, and there is also a room for ophthalmic purposes with its own small operating room. In a recess in the large hall a refreshment counter has been provided.

Reviews and Notices of Books.

Tent Treatment for the Tuberculous Insane. By A. E. MACDONALD, M.D., LL.B., Medical Superintendent, Manhattan State Hospital, East. Published by the Committee on the Prevention of Tuberculosis of the Charity Organisation Society of the City of New York and the National Association for the Study and Prevention of Tuberculosis. 1904.

THIS is a brochure reprinted from a directory of institutions and societies dealing with tuberculosis in the United States and Canada. Dr. MacDonald is, if we mistake not, a pioneer in the matter of tent treatment of the tuberculous insane. The annual reports of the Manhattan State Hospital have of late years recorded his experiences and reference has been made to the subject in THE LANCET of Oct. 10th, 1903, p. 1029. He has demonstrated by an experiment covering a period of 40 months at the time of writing that the consumptive insane may be treated to their own advantage and to that of their fellow inmates and attendants throughout the various seasons of the year in this manner. The original intention was to remove the patients to the permanent buildings for the winter months but experience showed this to be unnecessary. The tents were adequately heated by stoves. It is not the purpose of Dr. MacDonald's present communication to go into details of the results obtained by tent treatment. For these readers are referred to the annual reports of the Manhattan State Hospital and to special articles in the *Journal of Insanity*. The author here contents himself with stating that the patients suffered no injury or hardship but, on the contrary, benefited, as shown by decrease in the death-rate from pulmonary tuberculosis, both absolute and relative, and by marked increase in bodily weight of those affected. Many persons were discharged to their homes from the tents with the pulmonary disease to all appearances completely arrested; others whose insanity continued were discharged in a like state of arrestation of lung disease to the wards and these latter were still quite well at the date of writing, two years afterwards. Incidentally it is mentioned that not only the patients but also the nurses living in the tents enjoyed almost complete immunity from other pulmonary disorders. Whereas pneumonia caused 131 deaths in the hospital proper during the three years of tent treatment, not a single case developed in the tents. Common colds, also, frequent in the wards and in the attendants' home, were unknown among the tent dwellers. The experience at Manhattan is against the claim for high altitude, for the tents were located but a few feet above the tide-water level and "the site of the camp is swept in winter by winds of high velocity coming over ice-bound waters, and it suffers as much as, or more than, any other part of the city of New York from the trying changes of temperature and humidity which are so characteristic of its climate." The experience at Manhattan would appear to justify the trial of tent treatment in asylums for the insane in this country.

Atlas und Grundriss der Kinderheilkunde. (Atlas and Rudiments of the Diseases of Children.) By Dr. R. HECKER and Dr. J. TRUMPP. Munich: J. F. Lehmann. 1905. Pp. 482. Price 16 marks.

THIS new work on the diseases of children is the thirty-second volume of Lehmann's series of hand atlases of medicine. The authors express in their joint preface the hope that their united efforts may contribute to the understanding of the larger systematic works on pædiatrics and to the management of the more ordinary cases which are met with in general practice. They consider that a want of systematic clinical teaching on the subject

of the diseases of children in many of the German universities renders the publication of a well-illustrated atlas not only opportune but absolutely necessary if young qualified practitioners are to cope with the varieties of diseases among children which usually form the bulk of their practice. Although it may be questionable whether here is any trustworthy substitute for clinical experience and teaching in the wards, nevertheless we are inclined to believe that a large number of practitioners in Germany will find this little volume not only a valuable substitute but also a useful supplement to the bulky text-books on the same subject which are provided for their use and instruction. The majority of these larger books are so laborious to read and so deficient in illustration that few general practitioners find the time or the opportunity to read them. The little book before us well fulfils its title of atlas. It contains 48 coloured plates and 144 uncoloured illustrations. Certain of both of these groups of illustrations are, perhaps, a little fanciful, out of proportion, and in a few instances quite inaccurate. This is noticeably so in the case of the full-page illustration which presents the skeleton of an achondroplasic individual. In this illustration the length of the head from the apex to the chin is slightly longer than the trunk as measured from the clavicle to the lowest point in the pelvis—proportions which are not only obviously inaccurate but strangely perversive of the truth. Some of the coloured illustrations of the exanthematous rashes and of certain conditions of the skin are not of a very high standard, while that of Koplik's spots is more suggestive of aphthous stomatitis than of the pathognomonic exanthema of measles. Again, on p. 41 appears an illustration of the manner of examining the throats of children. To our mind it represents a method which should be most carefully avoided. The good features of this book apart from the profuseness of the illustrations are, first, the brevity and the conciseness of the general account of the course of the various diseases mentioned and of the ordinary symptoms; secondly, the excellence of the pathological summaries; and, thirdly, the systematic arrangement and the classification of the morbid conditions included in the scheme. Like many other German works, this compilation appears to have been written with painstaking care. It is well up to date and includes an account of most of the recent work in diseases of children. The excellence of the print, of the paper, and of the binding is to be commended.

LIBRARY TABLE.

British Journal of Children's Diseases. Vol. I. Edited by GEORGE CARPENTER, M.D. Lond. London: Adlard and Son. 1904. Pp. 594. Price 15*s.*—The volume under review represents a bound edition of the first 12 numbers of the *British Journal of Children's Diseases.* Considering the short time during which this journal has been in existence it has already met with remarkable success, not only in the number and the variety of the contributions but in the high standard of excellence which characterises many of the original articles, the extracts from current literature, and the illustrations. Among the features of this journal are the publication of signed reviews, the full reports of the Society for the Study of Disease in Children, and the excellent little paragraphs which appear monthly under the title of "Excerpta Puerilia." Two or three of the original articles which appear in this volume are of considerable importance. One of them is by Mr. R. Clement Lucas on an Ill-developed Upper Lateral Incisor Tooth as a Forerunner of Hare-Lip or Cleft Palate and another one is by Mr. J. H. Evans on the Relation of Certain Extra- and Intracranial Hæmorrhages in the Newly Born. The editor and the publishers are to be congratulated on the success of the first volume of this new journal.

Reports of the Society for the Study of Disease in Children. Vol. IV. Edited by GEORGE CARPENTER, M.D. Lond. London: J. and A. Churchill. Pp. 378. Price 12*s.* 6*d.*—The reports of the above society for the session 1903–04 are included in this volume and constitute a compilation of some valuable clinical material. The institution of this society some four years since has unquestionably greatly stimulated the study of the diseases of children in this country and the series of reports which have so far been published provides an acceptable record of many highly instructive and interesting cases which might otherwise have been lost to medical readers. Many of the illustrations are of first-rate excellence and throughout there is evidence of care in the work of editing.

New Streets: Laying Out and Making Up. By A. TAYLOR ALLEN, Engineer and Surveyor to the Portslade-by-Sea Urban District Council. London: The Sanitary Publishing Company. 1905. Pp. 175. Price 3*s.* net.—The avowed object of this work is to serve as a handy book of reference to those engaged in operations conducted under the Public Health Act, 1875 (Section 150), and the Private Street Acts, 1892. It deals with the laying out and making up of new streets and contains plans, specifications, estimates, and apportionments, together with precedents of notices to be served on owners in connexion with the works indicated. As such it will perhaps be found a convenient guide and reminder for those not needing to refer to a bulkier volume or to books dealing more specifically with the subjects comprised. It is a little doubtful, however, whether it can, as the author suggests in his preface, be conceded that instructions given in a condensed form are useful for the guidance of the student. The student is best instructed who performs as much as possible of the boiling down and condensing process for himself. Mr. Allen, in a page of original text, under the heading "Gradients," states that he is "one of the few surveyors who believes that all wide carriage ways, where traffic is considerable, should have the channel in the centre instead of at the sides, thus obviating the tendency of vehicles to slide down the haunches of the road towards the kerb." Why it should be preferable that vehicles should tend to slide towards the centre from the sides of a road he has not perhaps space to explain, nor does he say how drivers who under the usual form of road construction cannot get their horses' feet into the channel, and need not get their wheels into it either, would like the innovation suggested.

The Municipal Year Book of the United Kingdom for 1905. Edited by ROBERT DONALD. London: Edward Lloyd, Limited. 1905. Pp. 622. Price 3*s.* 6*d.* net.—The continual development in all departments of municipal life inevitably involves an extension with every edition to all sections in this book. A brief general review is given of the work of each local authority in alphabetical order, under the name of the city, town, or district, and, wherever possible, the statistical and other information is arranged in a series o special sections in tabular form. A double index—that in the front of the volume and the page numbers for each section at the end of the general summaries—makes the references as simple as it is possible to make them. The practice of interpolating pages of advertisements amongst those of the text appears to us to be an objectionable one. The print of the book is excellent. It is a most useful volume.

MEDICAL EXHIBITION.—We are asked to announce that "a medical exhibition of a high-class and strictly professional character will be held in London during the autumn of this year. The attendance will be strictly confined to medical men, no others being admitted." Particulars can be obtained from the secretary, 44, Bishopsgate Without, E.C.

Reports and Analytical Records
FROM
THE LANCET LABORATORY.

CERATINE PETROLEUM JELLY.

(PRICE'S PATENT CANDLE CO., LIMITED, BELMONT WORKS, BATTERSEA, LONDON, S.W.)

AN excellent feature of this petroleum preparation is its purity. Consisting entirely of pure hydrocarbons it is free from any liability to become rancid. We have examined both the yellow and the white ceratine petroleum jelly. The white ceratine is absolutely white and the yellow ceratine has the appearance of ordinary vaseline. Ceratine is well adapted for toilet purposes on account of its blandness and purity and in some instances it would serve as an admirable basis for ointments. Ceratine may be procured with or without perfume.

SCOTCH WHISKIES.

(WALTER BALLANTYNE AND SONS, ST. BOSWELLS, SCOTLAND.)

We have examined two specimens of whisky of the above firm. The specimen V.C.O. Special Liqueur Highland Whisky proved on analysis to be an all-malt spirit, whilst the specimen marked Finest Old Highland Whisky showed the characteristics of a part-malt spirit. The analysis of the former was as follows: alcohol, by weight 41·55 per cent., by volume 49·02 per cent., equal to proof spirit 85·90 per cent.; extractives, 0·12 per cent.; and mineral matter, 0·03 per cent. The secondary products, given in grammes per hectolitre of absolute alcohol present, were as follows: acetic acid, 36·00; aldehyde, 10·00; furfural, 2·66; ethers reckoned as ethyl acetate, 82·00; and higher alcohols, 200·00: total secondary products, 330·66. These figures coincide with those obtained with a genuine all-malt spirit. The whisky is well matured, possessing a fine delicate flavour in spite of the fact that it is an all-malt spirit. It represents what true matured whisky should be. The analysis of Finest Old Highland Whisky gave the following results: alcohol, by weight 42·29 per cent., by volume 49·81 per cent., equal to proof spirit 87·29 per cent.; extractives, 0·13 per cent.; and mineral matter, 0·02 per cent. The secondary products, given in grammes per hectolitre of absolute alcohol present, were as follows: acetic acid, 48·00; aldehyde, 6·00; furfural, 1·50; ethers reckoned as ethyl acetate, 51·00; and higher alcohols, 100·00: total secondary products, 206·50. These figures indicate a part-malt spirit and it is therefore hardly correct to describe the spirit as Highland whisky, since all whisky produced in the Highlands is all-malt spirit. Nevertheless the blend is a satisfactory one and mild to the taste.

MALTICO.

(THE MALTICO FOOD COMPANY, KINGSTON CROSS, PORTSMOUTH.)

In a previous analytical notice of maltico in THE LANCET of May 23rd, 1903, we pointed out that compared with the solid constituents of human milk the composition was satisfactory except in regard to fat which was deficient. This deficiency has been made good and, chemically speaking, maltico now shows a composition identical with that of human milk, taking, of course, the amount of water in each case into account. A recent analysis of maltico gave the following results: moisture, 3·00 per cent.; mineral matter, 2·70 per cent.; proteid, 15·25 per cent.; fat, 23·40 per cent.; and carbohydrates (chiefly maltose with some dextrin), 55·65 per cent. The average analysis of dried human milk is as follows: mineral matter, 1·70 per cent.; proteid, 12·70 per cent.; carbohydrates (milk sugar), 57·60 per cent.; and fat, 28·00 per cent. According to this comparison one part of maltico by weight added to 7·3 parts by weight of water should give a fluid having approximately the same composition as human milk. The product is satisfactory as regards taste and is very convenient for the preparation of a food for the use either of infants or invalids; its value is increased by the fact that its constituents are very largely soluble in water.

MARSALA WINE (OLD PARTICULAR BRAND).

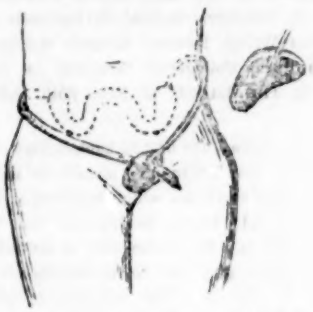
(WOODHOUSE AND CO. AGENTS: COCK, RUSSELL, AND CO., 36, GREAT TOWER-STREET, LONDON, E.C.)

Marsala wine partakes of the characteristics of old brown sherry and it is produced much in the same way as are the famous wines of Jerez. The analysis of Marsala wine approximates to that of sherry. Like sherry, it contains a relatively large proportion of vinous ethers, the development of which is encouraged by the use of sulphate of lime in the wine press. The following were the results of the analysis of this specimen: alcohol, by weight 16·46 per cent., by volume 20·24 per cent., equal to proof spirit 35·47 per cent.; extractives, 6·80 per cent.; sugar, 4·54 per cent.; mineral matter, 0·30 per cent. (containing sulphate of potash); volatile acidity reckoned as acetic acid, 0·10 per cent.; and fixed acidity reckoned as tartaric acid, 0·46 per cent. The wine possesses excellent *goût* and is well matured, partaking in this respect of the character of a tawny port.

New Inventions.

RAE'S CURVILINEAR TRUSS.

IN the truss shown in the illustration a firm equable pressure is applied to the hernial orifice by means of a spring in the form of a stout wire about as thick as a quill pen. This spring rises upwards from the pad to just above the hip-bone and passes round to the wearer's back, where it is bent into a shape somewhat resembling the letter W and is comfortably padded as the wide dotted lines indicate. From this point a belt of soft webbing completes the circuit of the body and is hooked to the front pad in the usual way. The



maker claims that the pressure can be accurately regulated by bending the spring over the knee in the required direction, for this special kind of wire can be bent without either breaking or losing its tension. Various pads suitable for the different forms of hernia can be supplied and the point of pressure can be adjusted within wide limits by means of screws which fix the pad to the spring. The shape given to the spring is such that no part of it presses on a bony prominence. No understrap is required. The maker is Mr. Richard Rae, 56, Richmond-road, Shepherd's Bush, London, W.

A SPRING STEM PESSARY.

IN our issue of March 4th, on page 578, we drew attention to a new form of pessary, a sample of which had been sent to us by Messrs. S. Maw, Son and Sons. We now learn from that firm that the pessary was originally made at the instigation of Mr. W. Roughton of New Barnet, but with a rigid stem, the novelty claimed for the one described in THE LANCET of March 4th being that it has a flexible watch-spring stem.

THE LANCET.

LONDON: SATURDAY, APRIL 1, 1905.

Peritonitis.

AT the present time inflammation of the peritoneum is considered to be almost invariably the effect of the perforation of a hollow viscus or due to the direct introduction of micro-organisms from without. Formerly it was customary to speak of peritonitis as "brought on by exposure to cold, more especially when the skin has been previously relaxed by a warm atmosphere or by fatigue." It is true that it was recognised that intestinal perforation might cause peritonitis but such an etiology was considered to be rare and therefore comparatively unimportant. Now that it is acknowledged that bacterial invasion is the essential cause of peritonitis it naturally becomes of importance to know to what organisms we are to attribute this inflammation. For it is evident that in all cases the microbic infection cannot be identical seeing that the clinical results differ widely even when the extent of infection is apparently the same. Such an inquiry has been undertaken by a large number of investigators but probably the most complete and elaborate study of the bacteria of peritonitis is that which was undertaken by Mr. LEONARD S. DUDGEON and Mr. PERCY W. G. SARGENT, and which has been described in the Erasmus Wilson lectures recently delivered by them before the Royal College of Surgeons of England and published in THE LANCET of Feb. 25th and March 4th and 11th.

In entering on the study of the bacteriology of peritonitis it was natural that an inquiry should be made into the possibility of the condition which has been styled chemical peritonitis. It will hardly be disputed that theoretically the introduction into the peritoneum of irritating chemical substances might give rise to peritonitis but this is not the point in dispute. The question is whether it is possible for an effusion of blood or other non-microbic fluid to set up an inflammation of the peritoneum without the assistance of any micro-organism. Most observers have answered the question in the affirmative, maintaining that it is possible for the effusion of blood in the peritoneal cavity to set up peritonitis without microbic assistance. Those who have held this opinion have ascribed the inflammation to the fibrin ferment or some other chemical product of the effused blood. In this view the lecturers were unable to concur, for they have investigated twenty cases of intraperitoneal hæmorrhage. Seventeen were the result of extra-uterine pregnancy and in every one of these a white staphylococcus was obtained from the blood clot and of the three remaining cases, in which the hæmorrhage was caused by rupture of the spleen or the liver, two also showed the same staphylococcus, while the third was operated on within two hours of the accident. To this staphylococcus albus Mr. DUDGEON and Mr. SARGENT ascribe great importance and to this point we shall return later, but here we may say that we are inclined to concur in the view that the unvarying presence of this coccus in all intraperitoneal hæmorrhages of more than a few hours' duration which they have examined goes far to justify the ascription of the peritoneal inflammation which occurs to its influence. It is well known that after the rupture of a tubal pregnancy a certain amount of fever is usually present and it is more likely that this pyrexia is due to a bacterium, if one can always be found, than to a toxic chemical substance derived from the blood.

Much evidence has been adduced in these lectures in favour of the view that each etiological variety of peritonitis has its own bacterial flora. In perforating ulcer of the stomach a good deal of uncertainty has existed as to the organisms associated with the resulting peritonitis, though the amount of work which has been done on gastric perforations has not been very great. The pneumococcus has been credited with an important share in the production of perforating gastric ulcer but the evidence in its favour is of no very great strength. Therefore the observations recorded in these lectures are of the greater value as it is evident that much care has been taken in the investigations. The lecturers have isolated a strepto-diplococcus from the edge of the ulcer in every case and in four cases out of seven it has been found in the peritoneal exudate also. The same organism was found in a perigastric abscess and also in a subdiaphragmatic abscess and in the pleural sac of a case in which the diplococcus had been found at the edge of the perforated gastric ulcer. A full account of the morphology, staining reactions, and pathogenic properties of the organism is given and from these it is clear that the coccus cannot be looked upon as identical with the streptococcus pyogenes; a great point in this connexion is the fact that its pathogenic properties are by no means great for in no case did it kill the inoculated animal though it caused severe symptoms for some hours. Again, of the seven cases of perforated gastric ulcer in which it was discovered only two died and in one of these the death occurred on the tenth day from pneumonia and without any peritoneal symptoms. In the other fatal case diffuse peritonitis was found and it is worthy of note that this was the only case in which the presence of the bacillus coli was ascertained. Another subject discussed in these lectures is called by the lecturers septicæmic peritonitis. They apply this term to cases in which the peritonitis is secondary and due to micro-organisms brought by the blood stream, though they acknowledge that there is no absolute proof that this is the mode of infection. In one case a child had "diffuse erysipelas" and on the tenth day signs of peritonitis developed and the child died within 24 hours. Here the streptococcus pyogenes and the colon bacillus were found. The lecturers considered that peritonitis due to the streptococcus pyogenes is generally a septicæmia. When peritonitis is due to this germ the streptococcus is absorbed so rapidly from the peritoneal cavity that death occurs before the tissues are able to offer any response to the attack. A brief account is given of some investigations made to

determine which leucocytes play the most important part in protecting the body against micro-organisms introduced into the peritoneal cavity. The results, which somewhat conflict with the views held by most observers, seem to show that the coarsely granular eosinophile cell is one of the most important phagocytes in the early stages of peritoneal infection, while the finely granular polynuclear cell is the chief phagocyte in the later periods of peritonitis.

Perhaps the most interesting and important conclusions at which the lecturers have arrived are those relating to the action of the staphylococcus albus in peritonitis. The adjective pyogenes is purposely omitted from the name as this organism differs in several points from the staphylococcus pyogenes albus. It has usually been held that the presence of a staphylococcus albus in a culture from a peritoneal exudate is due to an accidental contamination from the skin but the lecturers have succeeded in obtaining very clear agglutination reactions which go to show that the staphylococcus albus cannot be a mere contamination as at least six days are needed for the production of the reaction. The peritoneum possesses great power of absorption and this has been shown by MUSCATELLO to be due chiefly to the diaphragmatic peritoneum, though the stomata formerly described can no longer be recognised. The absorption of solid particles, such as bacteria, is carried out by phagocytes which appear almost instantly in response to a peritoneal irritant. This normal lymphatic absorption seems to be capable of dealing with a large amount of toxins and bacteria but should any absorption occur through the blood-vessels a rapidly fatal result may ensue and this is the great danger if the peritoneum is damaged. The exudation of fibrin resulting from a bacterial irritation of the peritoneum is, the lecturers hold, distinctly protective seeing that it lessens the absorption of toxic material by the subperitoneal blood-vessels and at the same time it limits the egress of organisms from the intestine. The importance of this in practice is clear. The thorough cleansing of the peritoneum by washing is undesirable, the lecturers hold, and it is, moreover, impossible. Facts are adduced to show that whenever intestinal obstruction occurs, or even an aseptic fluid such as blood is poured out into the peritoneal cavity, a number of organisms rapidly appear, apparently coming from the intestine. The first to make its appearance is usually the staphylococcus albus, an organism of very low virulence; and the lecturers conclude from their observations that it exercises some kind of protective action in peritonitis, chiefly by determining the advent of phagocytes but also by forming adhesions. When the staphylococcus albus has a good start the more virulent colon bacillus possesses much less power because the peritoneum has been prepared to resist it. Of all the micro-organisms found in peritonitis the most virulent appears to be the streptococcus pyogenes and a fatal result is almost certain should it be present. As to the treatment of acute peritonitis it is clear that as it may be due to many different organisms of very different degrees of virulence no uniform treatment is possible. Fortunately, the most virulent infection, that of the streptococcus pyogenes, is rare, for we are at present powerless to treat it, though a multivalent anti-streptococcic serum appears to be the most hopeful method. In the vast majority of cases the colon bacillus is the chief infective agent and therefore it is well to treat most cases of peritonitis of intestinal origin as cases of infection by the colon bacillus. The lecturers suggest that dry sponging applied locally to the affected region is better than washing, which may carry the infection to unaffected parts, while if those remote regions are already infected no amount of washing is likely to be of any avail. When there is a mild infection, as in gastric perforation and intraperitoneal hæmorrhage, the washing should be thorough. As to drainage it is pointed out that in the severer forms, where drainage is most desirable, the presence of much adhesive exudate renders drainage impossible. Investigations such as these, when made with the care which these lectures disclose, are of the greatest value and cannot fail to advance our knowledge of the processes of peritonitis. Caution is, however, necessary. In the application to practice of the theories based on such investigations our bacteriological conclusions must always be tried by the touchstone of clinical experience; by that alone can we be certain of their real value.

Double Consciousness.

AMONGST the most interesting and puzzling of psychical phenomena are those of so-called double consciousness, concerning which there has been considerable discussion in the press lately. This term in its fullest significance connotes something more than a mere modification, impairment, or clouding over of consciousness, such as may occur in various conditions of health and disease (for example, in dreaming and in febrile delirium); it implies nothing less than a dual personality. In a fully developed case of this kind there is a dual existence and the individual in either phase is ignorant of his actions in the other. The events of a particular phase are only recalled with the reappearance of that phase. In the second or altered phase the individual, notwithstanding that his character, manner, and capabilities may be completely altered, conducts himself in a rational and purposeful way. Exceptional cases are on record in which the person affected has remained definitely in the altered or abnormal state, which was superior to the original personality. Usually the abnormal state does not last for more than a few days. Instances are recorded in which a bridge of memory has been supplied between the normal and the altered phases by means of hypnotism, the patient in the hypnotic trance giving a complete history of his proceedings in the abnormal state when previously he could give no account of himself.

Such well-marked examples of dual consciousness as are above referred to are very rare, the separation of the two states being usually less distinct, and the abnormal phase is commonly below the normal in respect of complexity of conduct. Examples, more or less pronounced, of double consciousness are to be met with in somnambulists, in persons hypnotised and under the influence of suggestion, in various forms of insanity, in cases of febrile delirium, in post-alcoholic conditions, in neurotic persons recovering from bodily illness, and lastly, and

probably most frequently, in post-epileptic states or states of masked epilepsy. On investigating the history of persons exhibiting the phenomenon it is commonly found that there is a neuropathic inheritance. Amongst the insane cases of altered personality, more or less pronounced, are numerous and the state of altered consciousness varies much in duration. Some notable instances of alternating personality are to be found amongst cases of so called "circular" insanity, though in these there is little or no interruption in memory. From a medico legal point of view abnormal states of consciousness associated with somnambulism, epilepsy, and hypnotic suggestion, or occurring in neurotic individuals without such association, are of great importance. In 1887 AZAM published an elaborate monograph entitled "Hypnotisme, Double Conscience, et Altérations de la Personnalité," since which time several instances of the last two conditions have been reported in this country in the Proceedings of the Society for Psychical Research and elsewhere.

A very remarkable and carefully studied case of multiple personality was recently reported to this society by Dr. ALBERT WILSON. No less than ten varieties of the abnormal personality were noted. The patient was a girl, aged 12½ years, of healthy parentage, who had herself been healthy in mind and body until she was attacked by influenza, after which the changes of personality manifested themselves. Some of these were complete, others incomplete, some sudden, others gradual in appearance. In some the patient was totally, in all partially, ignorant of her life during other states. Acquirements such as drawing, writing, and also normal faculties present in certain states were lost in others. Whilst in a blind condition the patient developed the faculty of drawing with the aid of touch alone, this sense being enormously increased in delicacy. The character and the behaviour in some states differed widely from those in others. The various phases varied in duration from a few minutes to ten weeks. The normal state gradually became less frequent and of shorter duration till it finally disappeared. The various stages lasted about three years in all, until ultimately a particular abnormal stage was reached in which the patient remained at the date of the report. In this she was intelligent and able to work. The patient, it is important to note, had two or three epileptiform seizures but there was no reason to regard the altered psychical states as post-epileptic. The various manifestations in this case appear from the testimony of competent and independent observers to be undoubtedly genuine. There has been abundant speculation as to the causation of the states known as dual consciousness and dual personality and this is not surprising having regard to the interesting nature of the problem. Theories of vaso-motor disturbances in this or that area or level of the cortex cerebri do not call for serious consideration in the absence of any demonstrable basis and hypotheses which assume that there are different levels of the pyramidal layer of the cortex to which correspond different personalities are on much the same footing. These are merely explanations, *aus der Luft*, plucked from mid-air. Our present knowledge of the physiology of the constituents of the cortex cerebri does not warrant attempts at explanation of the various phenomena of consciousness.

Science in Romance.

ON March 24th there passed away at Amiens, in his seventy-seventh year, JULES VERNE, a man who during his life was in the enviable position of having contributed more than perhaps any one of his contemporaries to the delight and instruction of his fellows. The romance of science has long been a commonplace, but the converse term, the science of romance, is not perhaps always regarded with that intentness which it deserves, for in many instances the prophetic vision of the romance writer has foreseen possibilities which have not been realised until many years later. To refer only to two prophecies. SWIFT'S extraordinary guess at the number and times of rotation of the satellites of Mars was so far opposed to all known astronomical laws as to seem the wildest of hypotheses and yet how wonderfully correct it proved to be. EDGAR ALLAN POE, again, made his HANS PFAAL reach the moon by inflating a balloon with a gas which he extracted from a certain metallic substance by treating it with an acid, which gas was some 37 times lighter than hydrogen and was a constituent of azote. Many years after this was written chemists were startled by the discovery of helion, a gas which, though not a constituent of azote, is found in association with it. Moreover, when first discovered helion was assumed to be lighter than hydrogen. Subsequent investigations have, however, shown that it is twice the weight.

JULES VERNE, though he was perhaps the first modern writer to perceive the possibilities of modern science as an element of romance in fiction, cannot be said to have foreshadowed any great discovery. Submarine boats were not new when he conceived the wonderful *Nautilus* and although submarines are now quite common inventors have not as yet reached Captain NEMO'S success in making electricity from the constituents of sea water. Navigable balloons of a kind have been constructed but they are not worked on the principle of the "*Victoria*" which, as designed by Dr. FERGUSON, rose or fell by expansion or contraction of the contained hydrogen, so that the aeronauts were able to find a current of air blowing in the desired direction, without losing either gas or ballast. But VERNE certainly used scientific facts in a most brilliant manner for the manufacture of exciting stories. Nothing could bear an air of greater verisimilitude in accordance with the canons of science than his story of "From the Earth to the Moon," except perhaps that entertaining history of the voyage through space on a comet which crashed through the earth and bore away a portion of the Mediterranean sea-board, including a fragment of Gibraltar. In "Dr. Ox's Experiment," again, how delightfully he put forth the effect which saturating the atmosphere of a small Dutch town with oxygen had upon the phlegmatic inhabitants. VERNE was never betrayed into making the absurd mistakes into which less scientifically minded writers of romance have been led. We well remember in the early days of the x rays a story about a thief who swallowed a diamond. This was detected by the acumen of an amateur detective who took an x ray photograph of the diamond by using a camera. To say nothing of the fact that x rays cannot be refracted the diamond is the one gem which is transparent to these rays. In medical matters, again, the writer of fiction very commonly goes hopelessly wrong. The

anæsthetic, one whiff of which administered by waving a handkerchief in front of the victim's face causes instant unconsciousness, and the mysterious powder made from plants growing in the Andes which at once cures the deadliest diseases, are instances which will occur to anyone who has studied fiction.

But, on the whole, the ideals of ancient philosophers and of romance writers are becoming every day more and more realised. The ever-burning lamp of the ancients has in a manner had its fulfilment in the discovery of radium; the dreams of intercommunication without the intervention of any material substance have been realised by the work of CLERK MAXWELL, HERTZ, MARCONI, and LODGE, while it is not impossible that the so-called magnetic sympathy with which many seventeenth century writers busied themselves may be found before long to have its roots in the "n" rays or some similar form of energy. Radio-activity has upset all preconceived notions of the relations between matter and energy and it may well be that in years to come our children will be able to use forces now undreamt of in the same way in which we nowadays use heat or those forms of electricity which we do to a certain extent understand. No race of flying men like that so graphically described by PETER WILKINS has yet been discovered but it may be that such exist on another planet. The capabilities of knowledge are almost infinite and the wisest man among us is he who is most fully conscious of his own limitations of knowledge.

Annotations.

"Ne quid nimis."

GUY'S HOSPITAL.

Guy's Hospital, as is well known, was founded nearly 200 years ago, or to give exact figures in 1720. In 1828 William Hunt bequeathed a sum of about £180,000 to the hospital and the institution flourished and continued to do good work without any appeal to the generosity of the public until 1884 when owing to falling rents and agricultural depression the income from endowments had diminished by about 50 per cent. At this date the first appeal to the public was made and the principle of making some of the beds "pay beds" was introduced. In 1901 another appeal was found to be necessary on account of the buildings having become out of date and old fashioned. The sum asked for was £180,000 for rebuilding and other improvements and it was further mentioned that £25,000 per annum besides the income from endowments were necessary for the hospital to be kept in full working order. The governors now repeat the appeal of 1901 the response to which, to use their own words, "was inadequate." The necessary works have been carried out but the hospital is £84,000 in debt; its assured income is about £51,000 per annum but its total annual expenditure is calculated at £66,000 per annum. There is thus a deficit of £15,000 per annum for which, as well as for money to liquidate the debt, the governors are now appealing. The hospital has done, and is doing, noble and valuable work so we wish the appeal of the governors of Guy's Hospital every success and hope that the money will be forthcoming.

THE VENTILATION OF THE HOUSE OF COMMONS.

ACCORDING to a report recently presented to both Houses of Parliament the abolition of horse traffic in the streets of London would do much to improve the condition of the air of the House of Commons. There is no doubt that by the exclusive use of motor vehicles the air in all our big towns, and therefore of the houses and offices in these towns, would be made, bacteriologically speaking, much more satisfactory. We say bacteriologically advisedly, because motor-cars in their present form undoubtedly conduce to the pollution of the air with unpleasant and imperfect products of combustion. According to Dr. M. H. Gordon's report on the quality of the air of the House of Commons of the four faults brought to light one only is physical and three are bacteriological. The air supplied to the debating chamber under the present system is altogether too dry. We believe that this physical defect is of far greater importance in connexion with the quality of air than is generally recognised. At any rate, the peculiar and essential quality of air known as freshness is undoubtedly largely dependent upon its humidity and the enervating effects and malaise which follow a prolonged stay in a confined though freely ventilated space frequently have their origin in part in a subnormal state of humidity. Bacteriologically, the air of the House of Commons is faulty in the following directions. First, the air entering at the north inlet is liable to be polluted by dirt detached from the boots of persons walking over the grating fixed above this inlet. Secondly, the air below the floor of the debating chamber is polluted by bacteria derived from Members' boots, and the third source of bacteriological contamination originates in the material derived from the mouths and upper respiratory passages of persons speaking, coughing, or sneezing within it. It seems to us that the only satisfactory way of dealing with the peculiar circumstances of the House of Commons would be to adopt some efficient application of the plenum system, but this would involve, we fear, a serious alteration in the structural arrangements of the House. It is clear that Members' boots are likely to remain a source of contamination so long as the ventilation proceeds from the floor of the House upwards. We cannot agree with the recommendation made by Dr. Gordon that sulphuretted hydrogen should be used in order to test whether certain doors are air-tight. Sulphuretted hydrogen would, of course, be readily detected by its offensive smell, but why use an offensive agent for the test? There are many other substances the merest traces of which can be detected by the sense of smell and besides sulphuretted hydrogen would have a blackening effect upon any metallic adornments in the house or on lead pigments if they should happen to have been used, as is most probably the case.

URINOSCOPY.

UNDER the above heading we publish in another column a letter from a correspondent who informs us that in South Wales there still exist "medicine men" who profess to be able to "read the water." It seems strange in these days of universal education to find that such a mediæval belief still exists and that, moreover, in a country like Wales the zeal of which for education has been so prominently before the public recently. As lately as the seventeenth century books were published giving instructions to the practitioner as to the methods for the diagnosing of diseases by a mere inspection of the urine. Moreover, by an inspection could be told not only the disease but also the age and the sex of the patient. One such book printed in 1599 was called "A Key to Unknown Knowledge or a Shoppe of Fine Windowes," while another treatise was written by Robert Record. There exists also a delightful tract ascribed

to Arnold de Villanova, entitled "Cautelæ Medicoum," which shows very well how the mediæval physician looked upon urinoscopy. As for determining the sex that was done by a series of carefully put questions, and finally the author of the tract remarks with charming candour, "The seventh caution is this, and it is one which is often most useful. Very likely you will gather nothing at all from an inspection of the urine. In that case say that the patient is suffering from obstruction of the liver. The person who has brought the urine will then say, 'No, Sir, it's his head or his legs or somewhere else.' Then you must say, 'Well, that comes from the liver or the stomach.' Be sure to use the word 'obstruction' for they don't understand it and it is often very useful that people should not understand what you say." Perhaps our correspondent will be good enough to inform us whether the modern urinoscopist proceeds in the same manner as did his mediæval ancestor. As to the legal aspect of the case all quackery aims at obtaining money under false pretences but practically speaking there is no remedy. One way to stop it would be that which we have recommended over and over again—namely, that all unqualified persons practising medicine for gain should be made to pay a heavy annual fee for a licence.

PLAGUE IN INDIA.

THE information which we were able to forecast for our readers last week with regard to a scientific commission to inquire into the plague in India has now been made public. An Advisory Committee has been constituted by the India Office, the Royal Society, and the Lister Institute, which has for its object the study of the bacteriology of plague. The committee consists of Sir Michael Foster and Dr. J. Rose Bradford, nominated by the Royal Society; Colonel David Bruce and Dr. C. J. Martin, nominated by the Lister Institute; and Surgeon-General A. M. Branfoot, President of the Medical Board of the India Office, who will act as chairman. While we are glad that the Government of India and our legislators at home are at last sufficiently awake to the seriousness of the situation to be attempting to do something we do not view the attempt with much enthusiasm. The terms of reference to the Committee include only the study of the bacteriology of plague, for which purpose, we may add, it is a well constituted body; but no one will expect much from their work that is likely to lead to early administrative measures for the arrest of the disease. This is not said in any disagreeable spirit of criticism. To look to the cause before looking to the cure is a golden rule in scientific medicine, but could not the cause have been investigated some time during the past two or three years, say when the number of deaths per annum was about as great as it now is per fortnight? Now, when the deaths have reached the appalling total of over 1,000,000 in the year, we think that organised administrative measures based upon what is known should be undertaken. They might well be set in motion concurrently with the scientific proceedings of the Advisory Committee.

ACETONURIA IN CHILDREN.

THE significance of acetonuria has been the subject of much research since von Jaksch in 1885 drew attention to its occurrence in a variety of conditions as well as in diabetes—e.g., in certain febrile processes, in malnutrition, in carcinoma, and in some psychoses. In 1888 A. Baginski studied its occurrence in children, hoping to discover in it the cause of the convulsions of rickets, in which hope he was disappointed. He found acetone in the urine of children suffering from various febrile affections such as pneumonia, measles, scarlet fever, and diphtheria. Shortly afterwards Schrack working in von Jaksch's clinic found that diet exerted an influence upon the amount of acetone excreted, since in seven children who were fed on a diet chiefly composed of meat a large increase in the output of acetone was found. More recently the researches of Hirschfeld and Rosenfeld have more clearly elucidated the conditions leading to an increased output of acetone. These observers have shown that a deficiency in carbohydrates is the chief factor concerned and it was this fact that led Hirschfeld to state that carbohydrates were not sufficiently employed in some cases of diabetes. It is now very generally accepted that an insufficiency of carbobydrates in the diet is the cause of the increased elimination of acetone. This fact disposes of the old view that the source of acetone in the body is carbobydrate. Recently doubt has been thrown on the view that its origin is from proteid and the fact that on giving fat or fatty acids to patients deprived of carbohydrates the amount of acetone eliminated is increased renders it probable that fat is the prime source of the acetone. Dr. Ludwig F. Meyer of Berlin has investigated the conditions leading to acetonuria in the infectious fevers in children and has published his results in an interesting paper in the *Jahrbuch für Kinderheilkunde*, Band li., Heft 3, S. 438, 1905, from which the above historical *résumé* has been abstracted. His own investigations were made in 37 cases of diphtheria, 26 of scarlet fever, and 15 of measles. The urine was examined qualitatively for acetone by means of Legal's test. In normal urines a negative result was obtained with this test, whereas the result was positive in 70·3 per cent. of the cases of diphtheria, in 69·2 per cent. of those of scarlet fever, and in 60 per cent. of those suffering from measles. He also investigated the acetone quantitatively in some of the cases by distilling it off, converting it into iodoform, and weighing the precipitate so obtained which in a few of the cases corresponded to as much as 150–160 milligrammes of acetone per diem. He was also able to demonstrate the presence of diacetic acid and of β oxybutyric acid in those urines with a considerable amount of acetone. Dr. Meyer summarises his conclusions as follows. Acetone, diacetic acid, and β oxybutyric acid are frequently present in the urine of children suffering from acute infectious fevers and are due to carbohydrate inanition; they rapidly disappear on the administration of sufficient quantities of carbohydrates by the mouth. Fat increases the amount of acetone bodies in the urine. Oxybutyric acid is an indication of a more profound disturbance of the processes of oxidation than acetone or diacetic acid. The infectious fevers can, therefore, give rise to a condition of acidosis but not of such a degree that toxic symptoms are to be feared from it, although this acidosis is of similar character and of like origin to that occurring in diabetes and other conditions.

JAMES I. AND TOBACCO.

IT is scarcely to be wondered at, in an age when smoking is universal, that the tercentenary of the publication by King James I. of his "Counterblast to Tobacco" should have been allowed to go by unnoticed. The "Counterblast" was first printed in 1604 and by 1605 had probably been read by most thoughtful people. The King certainly dealt some tremendous blows at the pipe-smokers of his day. Tobacco and the lues venerea both came from America and the royal author impressed on his "deare countrey men" his conviction that the one was an antidote for the other and that to smoke a pipe was to advertise oneself as a sufferer from a virulent and nameless disease. Tobacco he held to be the symbol of national corruption and decline. Like all bad things it came from a mean source. "And now good Countrey men let us (I pray you) consider, what honour or policie can move us to imitate the barbarous and beastly maners of the wilde, godlesse, and slavish Indians, especially in so vile and stinking a custome?" The smokers

of Shakespeare's day believed the use of tobacco to be good for the brain. "It is thought a sure aphorisme in the physickes, that the braines of all men, being naturally cold and wet, all dry and hote things should be good for them; of which nature this stinking suffumigation is, and therefore of good use to them. Of this argument, both the proposition and assumption is false, and so the conclusion cannot but be voyd of it selfe." The King continues in this strain for several pages. Manifestly he chiefly hates tobacco because of its smell and one is inclined to wonder whether this was not more pungent in his day than now. When they smoked the Elizabethans and Jacobeans did not mince matters. "For the vanities committed in this filthy custome, is it not both great vanitie and uncleanesse, that at the table, a place of respect, of cleanlinesse, of modestie, men should not be ashamed to sit tossing of tobacco pipes, and puffing of the smoke of tobacco one to another, making the filthy smoke and stinke thereof, to exhale athwart the dishes, and infect the aire, when very often, men that abhorre it are at their repast? Surely smoke becomes a kitchin far better than a dining chamber, and yet it makes a kitchin also oftentimes in the inward parts of men, soiling and infecting them, with an unctuous and oily kinde of soote, as hath been found in some great tobacco takers that after their death were opened."

ACUTE LYMPHATIC LEUKÆMIA IN INFANCY.

ACUTE lymphatic leukæmia is rare in infancy. In the *Boston Medical and Surgical Journal* of Jan. 12th Dr. R. C. Larrabee has recorded a case in a child, six weeks old, which seems to be the youngest age at which the disease has been observed. A girl of this age was taken to hospital. She was the only child of Russian Jews and the family history was negative. She was born on May 14th, 1903. The mother had an easy and normal labour and was attended from the out-patient department of the Boston Lying-in Hospital. At birth the child weighed six and three-quarter pounds and appeared to be perfectly normal. She was breast fed. After the sixth day, as she cried incessantly, the breast feeding was supplemented by a mixture of milk and boiled water. She was taken to hospital on June 25th because of a slight attack of diarrhœa and vomiting of one day's duration. On examination she was found to be fairly developed but poorly nourished, weighing seven pounds and one ounce. The liver was normal. The spleen was felt extending from under the ribs to slightly below the level of the umbilicus; its edge was sharp. Numerous nodules varying in size from that of a pea to that of a marble were felt in the groins and the axillæ. The abdomen was slightly distended, tense, and apparently tender. Examination of the blood on June 27th gave: hæmoglobin, 60 per cent.; red corpuscles, 4,392,000; and white corpuscles, 918,000. A differential count gave: polymorphonuclear neutrophiles, 0·5 per cent.; small mononuclear basophiles (lymphocytes), 93·2 per cent.; large basophiles (large mononuclears and transitionals), 5·9 per cent.; and eosinophiles, 0·1 per cent. The basophile (non-granular) mononuclears, which comprised over 99 per cent. of the leucocytes, were of all sizes, so that the distinction between large and small forms was arbitrary. In some there was considerable protoplasm but in most there was only a narrow rim about the nucleus. Some appeared like free nuclei. A prolonged search revealed very rare normoblasts and equally rare mast cells. There was slight poikilocytosis. The digestive disorder was treated and arsenic was given but even in minute doses it was badly borne by the stomach and had to be interrupted. Although the diarrhœa was only partly relieved the child gained half a pound in weight and appeared to be doing well until July 25th, when she was taken to hospital in a state of collapse, with marked cyanosis, dyspnœa, retraction of the chest in breathing, and other evidence of obstruction of the larynx or trachea. There was no membrane in the throat but in one nostril was a small yellowish mass the nature of which in the child's condition could not be ascertained. The voice was not entirely lost. There were a few small hæmorrhagic spots on the abdomen. The child was immediately admitted for intubation or tracheotomy but she died before anything could be done. A necropsy was not permitted. Leukæmia is much rarer in infancy than in later childhood. In 1900 McCrae collected 13 undoubted cases of acute leukæmia in childhood to which he added one. Only one occurred in an infant. More recently cases of acute lymphatic leukæmia have been recorded at 20 months, 13 months, 12 weeks, 18 months, one year, and nine months. The case reported above ran its course almost without symptoms which would suggest the diagnosis of acute leukæmia. Hæmorrhages into the skin, a frequent symptom, occurred only on the day before death. But for the rule at the hospital to make a thorough physical examination of every patient and to examine the blood in every case presenting enlargement of the spleen or lymphatic glands the case would have been regarded as an ordinary one of summer diarrhœa. The question of the immediate cause of death is difficult. At first the respiratory obstruction was supposed to be due to diphtheria but opposed to this were the facts that the voice was not entirely lost and that no other evidences of diphtheria were present. Perhaps the obstruction was due to enlargement of the thymus which, according to Pinkus, is always present in leukæmia. On the other hand, the obstruction may have been due to leukæmic infiltration of the mucous membrane of the larynx, which has also been observed.

MUNICIPAL DEPÔTS AND THE STERILISATION OF MILK.

THE gradual establishment of municipal milk depôts in this country is bringing very prominently into discussion the question as to what should be the methods upon which such depôts should be conducted. It is now nearly six years since the first milk depôt was established in this country—namely, that at St. Helens by the corporation of that borough in 1899. Other corporations have followed suit with more or less similar methods. In a paper on this subject which Dr. G. F. McCleary, the medical officer of health of the metropolitan borough of Battersea, read at a meeting of the Royal Sanitary Institute on March 25th, he expressed the opinion that the methods adopted in this country are not entirely satisfactory. The necessity for sterilisation should, he thinks, be dispensed with, since mother's milk is not a cooked food and the aim should, therefore, be to supply milk in an uncooked state. The difficulty then arises that if raw cow's milk is to be supplied the whole of the processes involved in the production of that milk would have to be placed under the effective supervision and control of the responsible officers of the sanitary authority. This would mean, of course, that the sanitary authority would have to possess its own cows. In Dr. McCleary's opinion the following conditions in such circumstances could be fulfilled: 1. The municipal dairy farm should be in the country and not too far from the town and the municipal cows should be healthy and should live as much as possible in the open air. The sanitary conditions of the farm should be insured. 2. The cows should be milked in the open air and the whole process of milking should be conducted with the strictest aseptic precautions. 3. Immediately after milking, the milk should be cooled rapidly to a temperature not higher than 40° F.; the milk should be modified if necessary and promptly bottled. 4. The bottles should be packed in ice, placed in a specially constructed motor wagon, and conveyed to

the distributing centres in the town. These methods may seem to imply such a strict attention to details as to be beyond practical application but, as Dr. McCleary points out, they are in operation in the city of Rochester in New York State. Precise precautions are carried out at this depôt to sterilise not the milk but everything with which it comes into contact. Another defect of the British milk depôts pointed out by Dr. McCleary is that practically no provision is made for the effective individual medical supervision of the children. There is no doubt, he thinks, that the value of our depôts would be much increased if a regular medical consultation formed part of the work and especially if that consultation were opened to nursing mothers. Finally, Dr. McCleary concludes that (1) municipal milk should not be sterilised milk but clean milk produced under the strictest possible aseptic precautions. For this purpose the cows must be owned by the municipal authorities. 2. Municipal milk should be supplied primarily to three classes of consumers of milk—namely, nursing mothers, children over nine months old (who would not in the natural course of events be breast-fed, or at all events not wholly breast-fed), and infants under nine months for whom breast feeding is impracticable. Lastly, it should be the object of the municipality to increase the number of nursing mothers so as to diminish the number of infants placed in the last category.

A CASE OF TRAUMA OF THE POSTERIOR PART OF THE SECOND FRONTAL CONVOLUTION FOLLOWED BY ATAXIA, NYSTAGMUS, AND EPILEPSY.

AN interesting case was reported to the American Neurological Association and was subsequently published in the *Journal of Nervous and Mental Disease* for February last by Dr. F. X. Dercum, in which a man, aged 24 years, whose family history was good and who enjoyed good health, received a blow on the head from a baseball bat. He was stunned and subsequently lay in bed for some weeks with delirium passing into mental confusion. Examined two months after the injury the condition was as follows. There were two extensive scars in the frontal region, one on either side of the median line, that on the right side being the larger and more serious; there were also present ataxic gait, tremors and ataxic movements of the left hand and arm, nystagmus on lateral movement of the eyes of an irregular and ataxic kind, difficulty in standing on either foot, especially on the left, and intense headache. An exploratory operation in the right frontal region was advised but was refused. About a year after the accident an attack of an epileptic nature, succeeded by severe frontal headache, occurred. The patient was re-examined. The grasp of the left hand was found to be defective and he stood with difficulty on the left foot; there were persistence of tremor in the left hand, ataxia of the left limbs, diminished sensibility of the left arm, and diminution of the left knee-jerk. The condition of the eyes was as before. Rather more than a year after the accident he was operated upon, an osteoplastic flap being removed in the right fronto-parietal region from the border-line of the hair to just behind the Rolandic fissure. The dura mater was yellow and adherent to the pia-arachnoid over an area of from four to five centimetres. The cortex on incision was found to be darker and redder than normal and softened. The posterior portion of the second frontal gyrus was the region specially involved. The patient made a good recovery from the operation and examination from time to time showed improvement in the symptoms. At the final examination, a little over four years after the accident, the condition was as follows: the ataxia was absent, the patient stood well on either leg, the knee-jerks were normal, the tremor in the left hand was disappearing, there was slight awkwardness in movements of this hand, nystagmus was still present on lateral movement of the eyes, there was no feeling of numbness, and headache was rare. No epileptic attack had occurred for over a year and only one was recorded after the operation. The patient was unable to do hard work. The special interest of the case lies in the ataxia and the nystagmus in Dr. Dercum's view. He states that it is known that lesions of the frontal lobe may give rise to ataxia, sometimes bilateral. In connexion with the nystagmus it is pointed out that the second frontal gyrus is a centre which stands in direct relation to movements of the eye. But whilst conjugate deviation has been noted in lesions of this region nystagmus has not been previously observed, though reference is made to a similar case of nystagmus reported by Klien at the time of appearance of the above paper. Attention is drawn to the general character of the convulsive seizures although the lesion giving rise to them was limited.

PROPOSED CONFEDERATION OF THE LONDON MEDICAL SOCIETIES.

UNDER the above heading we publish in another column a letter from Sir William S. Church drawing attention to a meeting to be held on April 10th at the Royal College of Physicians of London, at 5 P.M., when the question of the desirability of uniting the central medical societies of London will be discussed. At the annual meeting of the Royal Medical and Chirurgical Society held on March 1st the project was referred to in the President's annual address and was well received by those present and, as we reported last week, on the occasion of the anniversary dinner of the Medical Society of London held on March 15th, it was mentioned by Sir William Church and sympathetically received by his audience. There can be but little doubt, in our opinion, that a confederation of the medical societies of the metropolis would be of great benefit in many ways. We hope that the forthcoming meeting will be largely attended and that a conclusion favourable to confederation may be come to.

THE SUPPLY OF ELECTRICITY.

AN analysis of the accounts for the year ended March, 1904, of the electricity supply undertakings established in the County of London, together with miscellaneous statistics relating to the area of supply, capacity, output, and average price obtained, has been published by the London County Council. The most interesting part of this analysis to the consumer is that which deals with the various prices charged for current per unit by different companies. The medical man, too, who has uses for the current other than that of lighting may well consider under what category he ought to pay—viz., whether that of lighting or of power and heat. In most cases the maximum price which is authorised to be charged for each unit is 8*d*. but in a few instances it is 7*d*. or 6*d*. and in the case of the Chelsea company it is as high as 10*d*. As a matter of fact, in no case in the County of London is the maximum price charged. The methods of charging for current are two. There is the flat rate system whereby current is charged at a fixed rate per unit whether the demand has been regular or intermittent. The maximum demand system appears, however, to be generally the most satisfactory so far as the economical working of an undertaking is concerned, though it is difficult, we fancy, to convince the consumer that this method is an advantage to him. The principle of the maximum demand system is that the rate charged per unit depends on the regularity of the demand. The system involves, in addition to the usual meter, the use of a demand indicator, the purpose of which is to register the maximum demand made for current at any one time during the period (usually a quarter) of the account. It is thus possible to work out the equivalent number of hours per day during which the maximum demand has been maintained and a sliding scale of charges is applied accordingly. The public, however, in general prefer the flat rate as being, perhaps, the more

intelligible method of the two. To give an example, in the case of a certain company the price charged per unit is a 6*d*. flat rate or 7*d*. per unit for the first two hours' average daily consumption of maximum demand during two winter quarters and for the first hour's average during summer quarters, and 3*d*. per unit in excess of this consumption. It would be much to their advantage if consumers would give greater heed to the meaning of the charges presented to them and if they would give more attention as to what the consumption of the electric current really means.

THE INSTITUTE OF MEDICAL SCIENCES FUND: A MUNIFICENT GIFT.

THE scheme for building and endowing an Institute of Medical Sciences under the control of the University of London has, as our readers know, received not only the approval and practical sympathy of His Majesty the King but has been favourably received by the medical and lay press and by a very large section of the London teachers of medicine and the allied sciences. Some large donations have been given already by prominent public men but the latest contribution towards the scheme is the most generous that has yet been received. Mr. Alfred Beit has informed the honorary treasurers "that having read the report of the committee appointed by King Edward's Hospital Fund on the financial relations of the hospitals and medical schools and the correspondence and articles thereon in the *Times*, he has decided to increase the amount of his donation from £5000 to £25,000." By this gift Mr. Beit desires to commemorate the great kindness of his friend Dr. Jameson, C.B., the Premier of Cape Colony, and the services of members of the faculty of medicine during an illness from which he has now happily recovered. At the next meeting of the Senate of the University of London a vote of thanks will surely be accorded to Mr. Beit, as has already been done by the Faculty of Medicine (see page 896 of our present issue), but in the meantime we may be allowed on behalf of the medical profession as a whole to thank him heartily.

A CASE OF INTESTINAL ANTHRAX.

AN instance of this, in the United Kingdom at any rate, very rare form of anthrax is recorded in the minutes of the meeting of the Glasgow health committee which was held on March 8th. On Feb. 1st, says Dr. A. K. Chalmers, the medical officer of health, a lead worker died from intestinal anthrax and Dr. Currie made a careful inquiry into the various sources from which the deceased might have been infected. His occupation was the grinding of white lead in *refined* linseed oil and in the course of his work he came into contact with the following substances which under varying conditions have been associated with outbreaks of anthrax. The substances were four—namely, linseed oil, spent oak bark, tallow used for lubricating a machine, and waste with which the deceased wiped his hands. The oil could be excluded because it was refined linseed oil, which during the process of refining is exposed for many hours to a heat sufficient to kill any anthrax spore in about five minutes. As to the spent bark, it is true that cases of anthrax have occurred in association with tan works, but they have arisen from hides before being submitted to the liming process. As the bark is used upon limed hides and the liming destroys the anthrax infection the spent bark could not be held responsible. The tallow was refined tallow which had been rendered at such a heat as to make it free from anthrax and the waste was cotton and jute waste which is not associated with anthrax. Moreover, no case of anthrax had occurred at the works from which these four substances were derived. As to the man's food, it was similar to that which many of his companions had eaten. Among other articles of food he, in common with others, had partaken of part of a pie and of part of a steak, the meat being traced to possible sources of origin but no definite anthrax infection could be traced. The report continues:—

> That many should partake of the dangerous meat and only one should die is not out of accord with the life-history of the anthrax organism. The organism has two forms—the bacillus and the spore. In the interior of infected flesh it exists in the form of the bacillus, and, as the bacillus, it is readily destroyed by the gastric juice. So much is this the case that a whole anthrax carcase was recently sold for food in an English city before its hurtful character became known and yet no deaths from anthrax were reported among those who ate the flesh. The anthrax spore, on the other hand, is one of the most resistant of living things and is unaffected by the digestive act. If, therefore, a fortuitous circumstance should favour local spore formation in an infective piece of meat, and if this local area of sporulation should escape the full incidence of heat in the process of cooking, a condition is established in the meat by which one consumer may absorb a fatal charge of spores while others who share the flesh with him may escape unharmed. Under such a condition this isolated death may have occurred.

The extreme rarity of this form of anthrax infection in this country is shown by the fact that Dr. J. H. Bell, in his article on Anthrax in "Allbutt's System of Medicine," vol. ii., p. 538, 1897, says: "No such case has been recorded in this country."

THE SMALL-POX HOSPITALS OF LIVERPOOL.

THE Local Government Board has issued a report by Dr. R. J. Reece which furnishes an important addition to our knowledge concerning the influence of small-pox hospitals in spreading this disease among persons living in their neighbourhood. At different times during the recent severe and protracted epidemic of small-pox in Liverpool three isolation hospitals were in use: the small Priory-road Hospital on the eastern edge of the city, the larger Park Hill Hospital in the south, and Fazakerley Hospital which lies outside Liverpool to the north. The first two have large populations resident in their vicinity. Dr. Reece has made an elaborate study of the local incidence of small-pox during the recent epidemic and his report is illustrated by a series of maps showing the houses which were affected during every fortnight of the two epidemic years, 1902 and 1903. The result of his inquiries is to show that inhabited areas within a mile of each of the three hospitals have suffered more severely than the city as a whole and that within these hospital areas the dwellings nearer the hospital have sustained a far heavier incidence of small-pox than those further away. He also shows that the exceptional incidence of small-pox within these areas has corresponded in point of time with the use of these hospitals for the treatment of acute cases of small-pox. Evidence of this was afforded in connexion with each of the three hospitals but was most striking in the case of that at Park Hill, which was used only for a comparatively short period, but during that time appears to have occasioned a local outbreak of very exceptional severity among those who dwelt in its neighbourhood. Dr. Reece concludes that the influence of the hospitals has been responsible in material degree for the considerable and sustained prevalence of small-pox in Liverpool in 1902 and 1903. We propose in a subsequent issue to give an account of the interesting data upon which these conclusions have been based.

PUBLIC HEALTH IN JOHANNESBURG.

THERE must be few, if indeed there are any, municipalities equally populous which approach Johannesburg in the disproportion of the sexes. The last census enumeration was made on April 17th, 1904, and from the preliminary report of the census commissioner (Dr. George Turner) it appears that there were 158,580 inhabitants, of whom 118,917 were males and 39,663 were females. The racial distribution was as follows: Europeans or whites, 52,042 males and 31,860 females; and all coloured races, including South African aboriginals and Asiatics,

66,875 males and 7803 females. Whether a community constituted on those lines possesses elements of stability may be an interesting question for sociologists. Dr. Charles Porter, the medical officer of health, in his report on the period from July 1st, 1903, to June 30th, 1904, gives the following as the marriage-, birth-, and death-rates per 1000 among the white or European population: marriage-rate, 28·4; birth-rate, 28·9; and death-rate, 17·2. Among the Asiatics the death-rate was 19·5 per 1000 and among the coloured African races it was 32·4 per 1000. The area of Johannesburg is 52,330 acres and the density of the population is 3·12 persons per acre, but within the area in question Asiatics live in "warrens" which are seriously overcrowded and Dr. Porter recommends the removal of these persons to an "Asiatic location." The chief causes of death in the mortality returns for the white population are diarrhœa and dysentery with 313 deaths, including 207 of children under one year of age, and pneumonia with 171 deaths. "Rock-drill pneumonia," or "miner's phthisis," caused 36 deaths. Among coloured persons who died within the municipal area pneumonia was by far the most fatal malady, causing 762 deaths; tuberculosis of the lungs was credited with 195 deaths; whilst "rock-drill pneumonia," or "miner's phthisis," was registered in only three cases. The death-rate from pneumonia among whites was 2·0 per 1000, while among coloured persons it was 10·2 per 1000. An outbreak of pneumonic plague was recognised in a coolie location on March 19th, 1904, and between that date and June 30th there occurred 24 cases in whites with 12 deaths and 88 cases in coloured persons with 70 deaths. The cases as they arose were transferred to the plague camp which had been prepared in the beginning of 1903 and the coolie location was burnt after the inmates had been transferred to a segregation camp.

THE TREATMENT OF CARDIAC DISEASE BY ELECTRIC CURRENTS.

IN the *Deutsche Medicinische Wochenschrift*, 1904, No. 52, is a contribution by Dr. Paul C. Franze, entitled "The Electro-therapy of Heart Disease in Combination with the Nauheim Treatment." Dr. Franze has carried out a large number of experiments in order to ascertain the effect of electric baths with the alternating sinusoidal current and of the "four-cell bath" with the faradic current on the action of the heart and on the circulation. The former produce, in the majority of cases, an increase in the blood pressure, a diminution in the frequency of the pulse, a more powerful contraction of the ventricles, and a decrease in the size of the heart if it be dilated. The faradic current does not seem to produce any decided influence on the frequency of the pulse or on the blood pressure, but it apparently has a favourable action on a dilated heart, the area of cardiac dulness decreasing in size after the application of the current. Dr. Franze states that he confirmed these observations by the use of the Roentgen rays, employing the method known as "ortho-diagraphy." He is of opinion that the above results are due to various factors—contraction of the muscular fibres of the myocardium, the direct action of the current on the nervous mechanism of the heart, and a reflex action set up by a stimulation of the sensory nerves of the skin. Dr. Franze further states that the practical results of a course of treatment consisting of a combination of the Nauheim baths with these electrical measures are highly satisfactory and certainly superior to the combination of "baths and exercises" hitherto known as the "Nauheim method." The amount of literature dealing with the mechanical therapeutic measures suitable for the treatment of chronic affections of the heart is now very large. Physicians in this country, however, are by no means unanimous as to the amount of benefit to be obtained by resorting to these methods and further experience of the effects of electric currents in combination with the baths will be necessary before any conclusions can be arrived at in regard to their efficacy.

THE medical officer of health of the Cape Colony states that for the week ending March 4th the condition of the colony as regards plague was as follows. No cases of plague in man or other animal were discovered throughout the colony except at Port Elizabeth and at East London, where plague-infected rodents continued to be found. As regards the Mauritius, a telegram from the Governor received at the Colonial Office on March 24th states that for the week ending March 23rd the number of cases of plague reported was 0. In Brisbane 9 cases of plague were reported during the fortnight ending Feb. 11th and of these cases 4 were fatal.

MANY of our readers will learn with regret that owing to ill-health Mr. F. J. Marshall has been compelled to resign the post of resident medical officer at St. George's Hospital, which he has held for over 30 years. A testimonial is shortly to be presented to Mr. Marshall by his friends at St. George's and elsewhere in token of their regard for himself and of their appreciation of his unvarying kindliness and tact. Subscriptions may be sent to Sir William Bennett, K.C.V.O., honorary treasurer, at 1, Chesterfield-street, Mayfair, W., or to the Dean of the Medical School of St. George's Hospital.

MEDICINE AND THE LAW.

A Twice-convicted Abortionist.

A MAN named Thomas Millerchip, whose name was removed from the Medical Register in 1885 in consequence of a conviction for felony, was sentenced to seven years' penal servitude at the recent assizes at Warwick for performing an illegal operation. The woman herself gave evidence against him and her story was amply corroborated by facts which the prisoner himself did not dispute, such as the enormous fee extorted from her and the fact that he had instructed her to burn his letters to her, both inconsistent with any innocent operation which the most fraudulent quack could pretend to perform. Indeed, the defence seems to have been that he pretended to do more than he actually did. The case in itself did not differ from many others of the same class but for the circumstance that other charges of a similar character which might have been made were referred to before sentence was passed and that a previous conviction for the same offence was recorded against the prisoner which had been punished by a sentence of ten years' penal servitude. It is interesting to note that to criminals of this class previous experience of conviction and punishment does not act as a deterrent but that after emerging from the convict prison they seem always to return to their old courses and frequently find themselves again in the prisoner's dock. The reason for this is indicated in the case of Millerchip by the fee to which reference has been made. The operation which he performed upon his accomplice in the crime, for such, of course, she was, earned for him the sum of £40. The money was "found by a friend" and the prisoner told the wretched woman when she tried to reduce his demand that he sometimes got £70 for assistance of the same kind. He also admitted in the witness-box that he "performed all sorts of operations, mostly upon women." It need hardly be said that a man of this type does not live in affluence but that the temptation to earn without hard work such sums as those named is great. They are also the reward of crimes which it is the interest of those upon whom they are performed to conceal and which may consequently, should all go well, be carried out many times without detection. The manner in which the quack is earning his living may be suspected by the police but evidence sufficient to justify arrest and to secure conviction may be for a long time unobtainable. A crime of a similar nature in that it involves a heavy penalty and yet is perpetrated upon a victim who dares not complain is that of blackmailing and it possesses

the same characteristic of large earnings for the successful criminal in proportion to the amount of exertion required of him and the blackmailer also returns to his old ways when he finds himself at liberty. In the case of abortion complete secrecy is apt to be rendered impossible by resulting illness and possibly death of the person upon whom the illegal operation is performed, but even then there is always a good chance that her evidence may be buried with her. In these circumstances it is desirable that prisoners convicted for a second time for either of these felonies should be treated as habitual offenders determined to persevere in the committal of their crimes and that they should be placed for a long period beyond the possibility of repeating them. The frequency of the procurement of abortion is not a matter which can be established by statistics but no doubt in some districts it is considerable and it is a crime aimed against the life of a child as well as dangerous to that of a woman.

The Accidental Extinction of Electric Light.

In the principal districts of Battersea recently, at about nine o'clock in the evening, the electric light was suddenly extinguished owing to an accident at the generating station. The effect of this was, of course, not only to plunge streets in darkness but a music hall had to be emptied after the audience had waited in vain for some time and no doubt a large number of people suffered considerable inconvenience and annoyance. The danger which this indicates when surgical operations are being performed with the aid of this illuminant alone is considerable. In large hospitals it may be possible for the institution to have its own generating plant, to be independent of any error except on the part of its own servants, or to minimise the risk of the universal extinction of all the lamps in one portion of the building. This, however, is not the case in private hospitals and nursing homes, nor can any private house be free from the possibility that in the midst of an operation which may not of itself be of a critical character an element of great danger may be introduced by sudden and unexpected darkness occurring. It is a matter which should not be lost sight of upon such occasions, particularly as in private houses, and indeed elsewhere, gas fittings are usually removed where electric light is installed, oil lamps are not kept trimmed, and frequently but few candles are kept in the house at all. Extinctions lasting for a few seconds only are by no means uncommon in some districts.

Ante-natal Injuries.

The case referred to under this heading in THE LANCET of March 25th (p. 813) is not unique in the records of forensic medicine. Several times, at home and abroad, has personal injury to the unborn child apparently arising from an accident to the gravid mother come before the law courts for comment or decision. In the criminal law it is settled that if a fœtus is wilfully injured, is then born alive, and subsequently dies from its prenatal maltreatment, an indictment for murder can be sustained. In the English civil law, and in at least three of the United States of America, it has been decided that neither the mother nor the child can sue for damages on account of the latter having been born prematurely or otherwise insane in body or mind owing to the wrongful act, sufferance, or default of another. There is, however, on record a French decision where very heavy damages were recovered from a negligent medical deliverer by whose aid the plaintiff lost an arm as he journeyed into the world. The grounds upon which the English legal view is based are, first, the fœtus is not yet a legal person and hence cannot be wronged; and secondly, the carriers did not know of its presence in their vehicle (e.g., a railway carriage or a lift) and so were under no obligation towards it. Lastly, such claims would involve the reception of medical evidence too conjectural to be trustworthy and would often necessitate a full discussion as to the theory and fact of "maternal impressions." There is a curious extension to which such actions might lead—a child might sue his own parents for any congenital pathological condition which was probably due to their previous iniquity or carelessness. Where the father has been accidentally killed the posthumous child has been allowed, although physically uninjured, to sue for damages and to share in a compensating fund. This apparent exception to the general rule is explained by the fact that the claim is in the nature of a right of property or succession, a right which has general application to posthumous children.

MEDICINE, ITS PRACTICE AND ITS PUBLIC RELATIONS.

CHAPTER VI.[1]

THE GRIEVANCES OF THE MEDICAL PROFESSION (*continued*).

The Evils of Quackery.—Quack Advertisements.—Prescribing Druggists.—The Pharmaceutical Society and Dispensing by Medical Assistants.—The Prescribing Optician.—Registered Midwives.—Parish Nurses.—The Prescribing Parson.

THE evils of contract practice and the abuse of the gratuitous medical advice and treatment given in charitable institutions have this in common—they may possibly be remedied by reform of the medical profession from within. If medical men as a whole were alive to their interests they could set these troubles right at once. But other things which weigh hardly on medical men are the various forms of competition which, coming from without, can only be removed by some action from without, possibly and to some extent by a change of popular sentiment, but only with certainty by legislation. First among these is the competition of quacks. Quacks there have always been and quacks there will always be, but the immunity enjoyed nowadays by quackery is something a little remarkable; and when its effects on our generation are noted it is impossible not to wonder that no suggestion is ever made, save by medical men, that the law should attempt to find a remedy. Specific charges have been brought against quacks by their dupes, but almost always it has been found that the charges were not sufficiently susceptible of proof to warrant conviction. The licence enjoyed by irregular practitioners of medicine—by persons, that is, who possess in the legal sense of the word no licence whatever to practise—is absolutely wonderful. It would be ludicrous if it were not so sad. Medical electricians, medical hypnotists, medical botanists, and medical masseurs on the one hand, and the votaries of "safe-medicine," bone-setters, and the proprietors of patent remedies on the other,—all are ready to treat the community for every ill that flesh is heir to, and all claim to be the depositories of therapeutic secrets which have been denied to the intelligence of men who have made surgery and medicine the study of their lives and who have stood the test of examinations as to their knowledge. Surely but very little thought bestowed upon this situation should enable the dullest to see that it is a highly ridiculous one and one that reflects in no creditable manner upon public astuteness and good sense. Yet the ignoramus and the product of the highest culture will alike seek the administrations of the quack, and of the two the latter appears sometimes to fall the easier victim. The public have to choose the fittest people for their medical advisers. The competitors for their suffrages are two—(1) the medical profession, consisting of a body of trained and educated men tested in all the necessary scientific acquirements; and (2) the irregular practitioners, whose credentials are simply their own assertions supported by the corroborative evidence of satisfied patients. Which body is more likely to be the really learned one? In every other profession or walk of life the public would at once give their vote in favour of the properly trained body whose proven accomplishments speak for it. In every other profession or walk of life self-presented testimonials receive the exact attention from the public to which they are entitled, while testimonials from outside are subjected to some scrutiny. In medicine alone over such obviously necessary precautions is hesitation to be observed. It is easy to see what are the prominent factors which have

[1] Chapters I., II., III., IV., and V. were published in THE LANCET of Feb. 18th (p. 447) and 25th (p. 517), March 4th (p. 593), 18th (p. 736), and 25th (p. 817), 1905, respectively.

brought this state of affairs about. Many disorders tend towards recovery; aggravation of these complaints by inappropriate treatment does not necessarily obviate recovery; there are no limits to the imagination of the hypochondriacal and hysterical subject, and there are many diseases, especially diseases of the nervous tracts, the natural course of which is one of remission alternating with exacerbation. The quack fosters every possible delusion in his patients which can arise from these circumstances and reaps a harvest of eulogy, which he immediately prints and disseminates. The bulk of the testimony in favour of unorthodox methods may be obvious and fraudulent concoction, but a certain amount represents the genuine delusion of weak and ignorant patients. Every medical man receives such testimony to his apparent ability but, knowing its worth, he keeps the communication of his patient to himself, whereas the quack blazons it abroad and so, with the favour of the press, is enabled to secure new gulls.

For undoubtedly nowadays the quack is strangely favoured by the press. The subject of quacks' advertisements is one upon which public opinion stands much in need of being both formed and stimulated. The discredited quack, when once his methods of doing business have been exposed, secures plenty of reprobation, but the prosperous quack appears able to have his own way with the world. That the general public should be misled by bold advertisement and garbled testimonials is no matter of surprise and, indeed, is too natural to be even a matter of complaint. That a certain amount of quackery should pass muster with the lay press as a form of commercial enterprise can be understood. A newspaper editor or manager may be pardoned if he thinks that the use of his columns to make a nostrum known is a legitimate branch of newspaper business, especially when it is remembered that if he took the opposite view the proprietor of the newspaper might be willing to hear of his resignation. But while this is true with regard to some advertisements it is not true of others, and the disgusting advertisements of many modern quacks ought to be tolerated by no self-respecting editor, manager, or proprietor. Yet no falsehood is too shameless, no promise too palpable a trap, to be refused currency in the advertisement columns of some of the best known journals and it is noteworthy that among the worst offenders in this respect are newspapers and magazines which enjoy with certain classes of the community a high reputation for accuracy and *bona fides*. Regard being had to the lavish expenditure which is bestowed upon advertising some quackeries, it is obvious that those who take toll of the advertisers are participators in the proceeds of this sinister traffic. There have been, it is to be feared, flagrant cases in which an extravagant advertisement has been the price of corrupt silence or even of venal praise on the part of the press. Such practices stand in no need of condemnation. There have been again cases in which, while there has been no such confession of infamy as is implied in a bribe, yet the scale and tenour of the advertisements bore a vicious relation, a high price being asked for a filthy advertisement. Not long since some of the most popular newspapers in the country were accepting regularly the advertisements and money of a crowd of scandalous persons engaged in selling so-called "female remedies." The essence of these advertisements was a promise to pregnant women that certain pills or potions would cause abortion, so that the woman who bought them was either aided in an attempt at crime or else swindled out of her money. By dealing complacently with such customers the editor or the proprietor of a journal, whichever of them may happen to be responsible, makes himself a party to an odious and despicable kind of fraud. The weak, and especially the weak woman, the ailing, and the poor are the chosen victims of the quack. By playing on their fears and taking advantage of their distresses he persuades them to pay exorbitant prices for his worthless goods. Thus does he obtain command of the sums of money which he lavishes in advertisements and those who cultivate his custom must not complain if they are charged with complicity in his misdeeds. It is urgently to be hoped that some attempt will be made soon by legislation to counterbalance the evils of quackery. Medical practitioners are not the only, or even the chief, losers by the mischievous frauds of quacks. The whole country suffers from their evil machinations and it is a thousand pities that no voice but that of the medical profession is ever raised against them. For the opposition of the medical man to the quack, however legitimate, cannot be called disinterested and therefore does not weigh with the public.

While quacks are under discussion the practices of certain persons who are allied to the medical profession, but who, not content with an ancillary position, try to usurp professional work and to encroach upon the province of medicine, should come in for comment. These people cannot be called quacks but, being unqualified, they do the work of qualified persons. Prescribing druggists who give medical advice and opticians who take upon themselves the work of the neurologist are cases in point. The methods of both these classes have long formed a legitimate subject of complaint among medical man and although the harm that is done by their practices may not be very large it certainly shows no tendency to grow less.

The Pharmaceutical Society very properly and strictly forbids its members to prescribe for patients or to take upon themselves the functions of the medical practitioner, but over the counters of scores of dispensing chemists every day and every hour there are given to the public medical advice and medical treatment. There is nothing illegal in the situation, for any unqualified person may give or sell medical advice to anyone else so long as he or she does not pretend to have legal justification to do so. (This must be kept constantly in our minds.) But although no law is broken so long as the dispensing chemist lays no claim to the position of the registered medical practitioner, yet the public are invited to take risks—not always so small as they seem—when they submit their ailments to the diagnosis of the non-qualified man; while an unfortunate separation of interests is created between the medical man and the dispensing chemist. The advisability of the action of the dispensing chemist in prescribing for the maladies of the public is not often defended by anyone. No serious argument can be founded upon the fact that in an emergency the druggist's shop is the natural place of resort. Among his wares will be found undoubtedly the usual stock of restoratives, styptics, bandages, and the like. But the prescribing chemist does not make his harvest out of chance accidents; he has a steady flow of clients who consult him. A defence of counter-prescribing is sometimes attempted on the ground that medical practitioners transgress the boundaries of the dispensing chemist's territory when they dispense their own medicines. And this brings us to a question concerning which there is some difference of opinion among medical men. Is it right, proper, and advisable for medical men in any circumstances to make up and to dispense their own medicines? The answer, of course, is Yes, but even while we say "Yes" we may regret that we cannot answer differently. Undoubtedly it would be advantageous to the medical profession in every way if medical men prescribed their medicines only, leaving the making up of the formulæ to the dispensing chemist. The practitioner would appear to his patient's eye as the dispenser of medical knowledge and as nothing else and the patient would understand that his fees were due to the member of a scientific profession and not to the retailer, however distinctly scientific a branch of business the retailer may be engaged upon.

There have been many suggestions to make it unprofessional for medical men, save in emergencies, to dispense medicines, and quite recently one of the most important branches of the British Medical Association was asked to pass a proposal, to which effect was later to be given in a Parliamentary Bill, that medical men should cease to dispense. The meeting would have nothing to do with the motion because practical members of the association were alive to the actual conditions obtaining in practice. They could see that though the dignity of the medical profession might gain by the divorce of practice from dispensing, the alteration was not feasible. There are many neighbourhoods which are too poor and too sparsely populated to support a dispensing chemist, so that to make it incumbent upon the public to take their prescriptions to the druggist's shop would be impossible. And if it were not impossible in the present state of public knowledge and opinion it would not be wise. Apart from the fact that a poorly paid class of professional men make a small profit by dispensing their own medicines, the public, especially the uneducated public, put faith in a medical adviser who is prepared with a material remedy as well as with spoken precepts. It is a pity that this should be so, but as it is so we cannot ignore the existing sentiment. It is quite easy to see that the medical profession would gain in dignity by leaving dispensing alone but as yet the change cannot be made.

This will be a convenient place to allude to the action of the Pharmaceutical Society which has proceeded recently against members of the medical profession in Scotland for infringement of the Pharmacy Acts, for if the Pharmaceutical Society had succeeded in establishing its whole case something like a forcible division between the practice of medicine and the dispensing of medicine in one part of the United Kingdom would have been accomplished. At the winter meeting of the General Medical Council in 1900 a medical man was summoned to appear before the Council upon the following charge preferred by the Pharmaceutical Society:—

> That he, being a registered medical practitioner, habitually employs as assistants for the sale of drugs and poisons persons who are not qualified to act as chemists or pharmaceutical assistants and thereby causes such persons to commit breaches of the Pharmacy Acts.

It was alleged for the Pharmaceutical Society that practices had arisen in Scotland which broke the law, inasmuch as many medical men owned chemists' and druggists' shops with a surgery attached at which they attended only for two hours or so, the premises being left for the rest of the day in charge of an assistant not qualified under the Pharmacy Acts of 1852 and 1868. The Pharmaceutical Society asked the General Medical Council to regard this situation as constituting "covering," the assistant doing medical or pharmaceutical work under the name of his principal. The General Medical Council considered that the Pharmaceutical Society had made out its case and the Society proceeded to secure more convictions. The defence of the practitioners was that assistants qualified under the Pharmacy Acts could not be obtained in Scotland; that all over the West of Scotland the practice complained of was habitual; that the unqualified assistant received instructions not to sell poisons save under the supervision of his principal; and that the legitimate employment by medical practitioners of dressers and midwives formed a precedent for what was being done. Protests against the view taken by the General Medical Council were addressed to the Council by influential members of the medical profession in Glasgow and possibly as a result of this the Pharmaceutical Society ceased action, but the position taken by the Society was a perfectly logical one—so logical that the prosecutions would have been continued had it not been that the conditions of life made the provisions of the law, when strained in their interpretation, impossible to obey. To compel every medical man to keep a qualified assistant to dispense for him is not possible and the alternative course of employing a dispensing chemist cannot be insisted upon. A dispensing chemist will only be found in a neighbourhood which will support him in the exercise of his calling and until this fact can be got over any attempt to make it compulsory upon a medical man to employ a dispensing chemist must be futile.

Another unqualified rival to the medical man who has lately become active is the prescribing optician, or "optologist," as it has been proposed to call him. The medical man's view of the optician is that he should be an instrument maker and should sell to the public glasses in accordance with the formulæ supplied by the practitioner. He should not consider that a knowledge of optics, whether shallow or profound, fits him to prescribe glasses for the public, because the symptoms of disordered vision require a general medical education for their elucidation. The optician's view of the optician would sometimes appear to be very different. Hear him on himself: "It behoves the optician to know something of anatomy and physiology in general and of the anatomy of the eye and the physiology of vision in particular. He should have some knowledge of neurology and the various nervous ailments which are directly caused by, or dependent upon, eye-strain. He should have some knowledge of ophthalmology in so far as it includes the various diseases of the eye, not for the purposes of treatment but for its prompt recognition in those who apply to him for glasses, in order that intelligent advice may be given the patient to seek medical assistance before the pathological condition has become chronic or incurable." The passage is quoted from a paper in the *Optician and Photographic Trades Review* and the views of the writer are endorsed by the editor of that journal. Such an optician would be more than half a medical man if his attainments would stand the test of examination. Opticians and the attendants in their shops do not necessarily pass any test at all and we may take it for granted that, as a class, they have not any medical knowledge. As far as simple optical principles are concerned the optician is, or ought to be, capable of giving as good an opinion as the medical man. The glasses that he can supply may be quite as correct as those prescribed by the medical man, compensating accurately and perfectly for the defects of the patient's eye; but, unfortunately, in many cases the glasses are none the less unsuitable and should not be worn. Many circumstances have to be taken into consideration of which the optician, even though he have some acquaintance with neurology and ophthalmology, is no judge. The general health of the patient, his avocation, the conditions under which he works, the length of time during which the glasses should be worn, are all points upon which the medical man is better qualified to give an opinion than the optician. The eyes are organs in which faults of shape and alterations of function incidental to advancing life are frequently complicated by physiological defects and pathological changes of a serious character. The knowledge of the qualified medical man should cover the whole range, the knowledge of the optician at the very best covers only a small and comparatively unimportant portion.

The Worshipful Company of Spectaclemakers has recently instituted an examination for opticians which does not include sight-testing in its schedule or provide for a knowledge of the ophthalmoscope, but there is no doubt that the optician to-day does largely test sight and prescribe glasses as well as sell them. His action in so doing is defended by the assertion that there are not enough qualified medical men with ophthalmological knowledge to do the work required by the public. This resembles the reply made by the medical man when he is asked why he performs the office of the dispensing chemist, and it is a correspondingly good

reply. It does not, however, make what is wrong right. The remedy for the situation is simple and the General Medical Council is aware of it. The examining bodies must hold special and careful examinations in sight-testing and ophthalmology so that no medical man for the future can obtain a place upon the Medical Register without being able to deal with all ordinary ophthalmological questions.

The gross impositions of the quack, the unfair tactics of the medical aid associations, the immoral use of hospitals, and the ill-instructed rivalry of the druggist and the optician do not complete the troubles of the general practitioner. There are others who should be his assistants and who prove to be his rivals—namely, district nurses, parish nurses, and registered midwives. The mischief done by all these persons is sometimes exaggerated, but their frequent usurpation of medical functions is undoubted. It will be remembered that when the movement which led to the existing Midwives Act was taking shape not a few medical men were seriously perturbed, foreseeing in the registration of midwives the creation of a lower order of general practitioners who would be able, because of an inexpensive training and an incomplete curriculum, to undersell the qualified medical man. Other medical men considered that the registration of midwives must be supported as the measure would secure to the parturient poor safe assistance in their need. There was this noticeable thing about the difference of opinion expressed by the two camps into which the medical profession was divided—they advanced the same claim for their views, viz., solicitude for the parturient poor. The majority of the general practitioners opposed legislation for the registration of midwives because they believed that the midwifery practice of a large proportion of the country would fall to semi-qualified people in whose hands a little knowledge would prove to be the proverbially dangerous thing. Conversely, a system whereby any woman, however ignorant, could attend another woman in childbed without any check being imposed on the possibility that she might not only kill the patient but constitute herself a focus for the spreading of puerperal fever was wrong—obviously and terribly wrong. The Midwives Registration Bill was therefore not so much a Bill for the relief of the sick poor as a Bill for the good of all classes. An Act was required which would protect the poor from the ignorant, dirty, and degraded practices of certain so-called midwives, which would protect the public from the spread of puerperal fever, and which would be able to supply an order of midwifery nurses who would not trespass upon the proper precincts of medical practice—who would not, in fact, practise in contravention of the Medical Acts. The present legislation is an honest attempt to arrive at a middle path between the desiderata. There is no denying that those who argue that the position of medical men under the Medical Acts has been encroached upon by the creation of an order of semi-qualified persons have still a forcible cry, but inasmuch as midwives are a recognised institution, to speak of dispensing with them, as has been done by some of the fiercer upholders of professional privileges, serves no purpose. Midwives must exist and must be made into a clean, reputable, educated class, though their use will be to a certain extent anomalous. The registration of midwives, in so far as it takes the midwifery practice among the lower orders out of the hands of the medical profession and confides it to a semi-qualified class, is, in fact, a retrograde step. For just as the agitation in favour of the registration of midwives was at its height the General Medical Council abolished the unqualified assistant because he was only partially trained, and one of his chief uses was as obstetric adjuvant to his principal. That is to say, that an Act of Parliament now allows women to do what a by-law of the General Medical Council has forbidden men to do. Again, the Act by allowing practically all pre-existent midwives to register has temporarily legalised the "Gamp" against whose ministrations it was aimed. In the future the full benefit of the Act will be felt, but for the present the public and the medical profession alike have but little cause of gratitude.

The same position that is so obvious in the case of midwives exists in the case of district and parish nurses. If these women are unscrupulous in their interpretation of their duties they can supplant the medical man. Undoubtedly, the services of such nurses are of great benefit to the community, but undoubtedly also by preventing medical assistance from being called they have proved now and again a source of danger. As a rule the district and parish nurses do not take medical duties to any great extent upon themselves, but they are apt to breed mischief by preferring to work with certain medical men to the exclusion of other medical men, and for a medical man to be dependent upon the patronage of a nurse is as galling as it is for him to be ousted from practice at the caprice of a nurse. Occasionally a parish nurse is backed up in her wayward behaviour by the parish clergyman and then the medical man, if he is not in favour with the clergyman, is indeed likely to have scant justice dealt to him. Clergymen, especially English country clergymen, are known to have violent medical opinions and prejudices. Many of them, like Sydney Smith, prescribe for their parishioners but they do it without the great humourist's medical education and natural shrewdness. Woe be to the country practitioner who ventures to reprove the prescribing-parson!

(To be continued.)

SIXTY-SIXTH ANNUAL REPORT OF THE REGISTRAR-GENERAL FOR 1903.

I.

IN a leading article in THE LANCET of March 11th, p. 652. we reviewed in some detail what may be termed the administrative part of Sir William Dunbar's report, commenting specially on certain innovations which seemed to us to be of more than ordinary importance.

We now come to notice that portion of the report which shows the distribution of English mortality by cause, age, and locality and contrasts the occurrences of 1903 with those of previous years. The year 1903 was remarkable for its exceptionally favourable mortality, the rate being the lowest recorded in this country since the establishment of civil registration in 1837. In relation to this fact, however, we are reminded of two important agencies which must have largely contributed to the reduction of the death-rate. In the first place, we have not yet emerged from the period in which the lowered birth-rate depresses the recorded mortality. In the second place, the year 1903, like its predecessor, was marked by exceptionally propitious conditions of weather, as well as by unusual freedom from epidemic disease. Bearing these agencies in mind, it is unreasonable to expect that in a country receiving hordes of destitute aliens from all parts of the world the present exceptionally low death-rate will be permanently maintained.

The return of a cycle of hot and dry summers or of very cold winters would inevitably raise the mortality—in the first case, by excessive diarrhœa fatality in the young and, in the second, by undue respiratory mortality in the aged. In either case the tendency would be towards a considerable increase in the general death-rate and this quite independently of the sanitary condition of the country. It is satisfactory to observe that the value of meteorological research, as an essential part of our preventive system, is now officially recognised by those who are competent to judge of its merits. The Registrar-General—who appears to

have expressed the obligations of his department to the late Mr. Glaisher on his retirement after 60 years of voluntary service—concurs with Dr. Tatham in his appreciation of the work which Dr. W. N. Shaw of the Meteorological Office has carried on since 1901, in continuation of the labours of his distinguished predecessor. Dr. Shaw's commentary on the conspicuous meteorological occurrences in 1903 occupies a prominent place in this volume and Dr. Tatham commends it to the study of those local observers who are specially interested in matters concerning the public health.

In reviewing the several causes contributing to the unique mortality of 1903 the writer properly cautions us to make due allowance for the defects still observable in the national records of mortality. We learn, in the first place, that of the half million deaths occurring annually in England, fully 10 per cent. are attributed to causes so indefinitely returned as to be practically worthless for statistical purposes, although the bulk of these have been certified by regular practitioners of medicine. In the second place, that in nearly 2 per cent. the causes of death are not certified either by medical men or by coroners; and lastly, that even in cases investigated by coroners the verdict of the coroner's jury often leaves it uncertain whether or not medical evidence had been given at the inquest. To the extent here indicated it is plain that the death records are defective. Nevertheless, with respect to nine-tenths of the deaths occurring in this country we are assured that the cause is medically attested with an accuracy which is steadily increasing year by year.

From the well-known fact that the mortality of most of the diseases that are important in a preventive sense varies enormously according to locality the first step in classification would appear to consist in arranging the various districts of England in groups corresponding as nearly as may be to "town" and "country" respectively. In the present report and in two of its predecessors this has been done, the English registration counties having been grouped so as to show in one list the industrial, and therefore mainly urban, communities and, in the other, the counties that may still be regarded as essentially rural. Inasmuch as the first of these groups contains an aggregate population of about 18,000,000 and the second a population of more than 4,000,000, the deaths therein occurring, being corrected for age differences among the living, afford rates which enable comparison to be made between the mortality of town and country. This method of division has been carried out as regards the mortality from most of the principal diseases and the results would appear to justify the very considerable expenditure of labour involved.

First, then, in respect of the total mortality. We notice a useful table showing the mortality from all causes and at all ages and contrasting "urban" with "rural" England, the crude or uncorrected rates appearing in one column and the corrected rates in another. From this table we learn that after making due allowance for age constitution of the living the mortality in urban England averages 19·2 per 1000, whilst that in rural England does not exceed 14·2. Incidentally it appears that correction *increases* the mortality in the former area by 4 per cent., whilst in the latter correction *reduces* it by 12 per cent.

Another table is given, which is in some respects complementary to that just noticed, because from this table the means are derived for making the corrections referred to. From this table it appears, first, that at the several stages of life from infancy to extreme old age the mortality in 1903 was below the quinquennial average; and secondly, that at every age group, except that from 5 to 15, the death-rate was uniformly the highest in the male sex and this is true alike for the urban and the rural areas. No explanation is offered in the report for the remarkable fact that girls at ages between five years and 15 experience a markedly higher mortality than do boys of the same age; it has, however, been suggested as probable that the approach of puberty is attended with exceptional fatality in the female sex.

The last table shows that, except at very advanced ages, the mortality in childhood is much higher and varies more widely than at other stages of life. It is because the period of infancy is known to be exceptionally susceptible to insanitary conditions that medical officers of health attach supreme importance to mortality at this age as a test of salubrity.

For the present report special tables have been prepared in order to show the mortality among boys and girls respectively from those diseases that chiefly affect young children. In one set of tables are shown the death-rates of infants under one year in terms of registered births and in another set the mortality among boys and girls under five years as a proportion of the number estimated to be living at that age. In all these tables will be found, not only the death-rates for the year 1903, but also the average rates for the preceding five years and, further, the mortality of the urban is contrasted in each case with that of the rural areas. From these tables we find that in England and Wales generally during 1903 the death-rates of infants of both sexes who had not completed their first year was in the low proportion of 132 per 1000 births, against an average rate in the five years immediately preceding of 152 per 1000. Male infants of this age died faster than female infants by 27 per 1000—an excess which corresponds closely with the average. It is perhaps unnecessary to contend that the ill-effects of town life are by no means limited to the earlier ages; nevertheless, for reasons already given, it is with local variations in the loss of life in childhood that sanitarians are especially concerned.

In the year 1903 infantile mortality in urban England exceeded that in rural England by 34 per cent., the excess in the preceding quinquennium having been 31 per cent. Among the several causes of death the most fatal in infancy are wasting diseases, which account for an average mortality of 42 per 1000 births in the country and 45 per 1000 in the town; diarrhœal diseases, for a mortality of 11 and 24 respectively; meningitis and convulsions, for a mortality of 16 and 17; pneumonia, for a mortality of 8 and 13; and bronchitis, for a mortality of 8 and 12. In the case of children under the age of five years we find that in addition to the diseases mainly peculiar to the first year of life diphtheria and scarlet fever now become important factors in the death-rate. The mortality at this age follows the law prevailing among infants in their first year—namely, that the sacrifice of life is by far the heaviest in urban communities. For whilst among boys in the rural districts the rate averaged no more than 44 per 1000 living it amounted in the urban districts to 69 per 1000; among girls the rate in the urban districts was 58 per 1000 but only 36 in the rural.

(To be continued.)

THE TEACHING OF HYGIENE AND TEMPERANCE.

A MEDICAL conference on the Teaching of Hygiene and Temperance was held on March 24th in the Examination Hall, Victoria Embankment, London, under the presidency of Sir William H. Broadbent.

Sir WILLIAM BROADBENT said that the object of the conference was to carry a step further the movement for promoting the teaching of hygiene and temperance in the elementary schools. It was initiated by a memorial signed by nearly 15,000 medical practitioners, which was followed by a largely attended deputation to Lord Londonderry. His lordship expressed sympathy with the objects of the movement but pointed out that the teachers in elementary schools were not as yet qualified to give instruction in hygiene. The training of teachers and the provision of suitable books were therefore the first questions to be considered. Of the necessity for the inclusion of hygiene and temperance in the subjects to be taught in schools there could be no doubt. The State had undertaken the education of the children of the poorer classes and had made attendance at school compulsory. It was therefore the duty of the local educational authorities to make the education given in the schools under their control efficient and to be efficient the education must be such as would fit the children for the places which they would occupy as men and women in the social organisation. It ought to prepare them to take up work by which they might earn their living and also to influence their character for good. If there was one thing more necessary for that end than another it was health and with regard to that the parents of those children were for the most part at once ignorant and careless. The mind of the country just then was much occupied by the question of physical degeneration. Underlying that, and largely responsible for it, was moral deterioration. At the root of both lay ignorance and vice. It was ignorance and vice that should be combated and that could only be done early in life.

Sir VICTOR HORSLEY said that the duty had fallen to his lot of reporting to the meeting the continued success of the action taken by the medical profession in favour of teaching hygiene and temperance in elementary schools. The petition of the profession to the Board of Education had been sent by the distribution committee to the various educational authorities throughout the United Kingdom. Such a large number of bodies from such different parts of the country had returned favourable replies that it was clear that the movement was widely appreciated and that the medical profession had taken a step of practical usefulness in the direction of social amelioration. During the interval the opposition offered by the Board of Education had taken the form of hostile criticism by Sir Michael Foster. Sir Michael Foster attacked in a printed memorandum issued by the Board of Education certain syllabuses which had been in use in some schools. His criticisms were so exaggerated and misleading that an answer had been framed and sent to the Board of Education. The petition committee, after preparing a list of points on which children of various ages might be instructed, was now engaged in framing syllabuses for the training of teachers as well as for the teaching of children. It was, of course, intended that the early training of children should be introduced in association with nature study work and that no new subject should be introduced into the Code. The National Union of Teachers had been misinformed in respect of the object sought to be obtained by the medical profession. It was a question purely of proportionate advantage and the object of the present medical movement was to secure that the subjects of bodily health and vigour and of healthy homes should receive as much attention at least as geography and history. The nation was becoming gradually alive to the duty which it owed to the coming generations but the Board of Education obviously required much more education itself in the direction of hygiene and temperance before the public interests could be adequately served.

Dr. ROBERT JONES made some remarks on the report of the Inter-departmental Committee on Physical Deterioration showing the intimate relationship between ignorance of the laws of health and the use of alcohol and physical deterioration. He pointed out that alcohol had a specially harmful effect upon growing tissues and therefore upon child-life. Alcoholic habits among women were peculiarly deleterious. He urged the necessity of individual effort towards reform.

Sir THOMAS BARLOW said that the change of opinion in regard to the value of alcohol in the treatment of disease which had taken place during the past 50 years had been brought about by increased knowledge coming from a multitude of varied experiences converging along the following lines: first, from the recognition of facts showing the widespread and insidious pathological effects of alcoholism; secondly, observations of the greatly over-estimated value of alcohol in the treatment of disease; and thirdly, the evidence that alcohol was not a necessity as an article of diet. He would be sorry to be prevented using alcohol in conditions of collapse but he considered that it should be used as a temporary aid and that its recurrent use in increasing quantity in acute disease was undesirable. In conclusion he emphasised the importance of recognising that alcohol was one of the luxuries of life and not one of its necessities.

Dr. W. COLLIER, President of the British Medical Association, stated the steps that had been taken by the council of the British Medical Association to promote the teaching of hygiene and temperance. His advice was that reform should be advocated in the most moderate and temperate terms. He pointed out that in regard to alcohol the medical profession was not unanimous on certain points; some said that in no circumstances should alcohol be used even as a luxury while others thought that alcohol had its place in therapeutics. Dr. Collier then proceeded to urge that inasmuch as the medical profession was unanimous on many important points concerning alcohol it was of the greatest importance that those points should be emphasised and that temperate language should be used in regard to the debateable points.

Mr. W. MCADAM ECCLES dwelt on the desirability of all medical students receiving full and sound teaching on the effects of alcohol for they were certain after qualification to be constantly questioned on the subject in all its sociological, physiological, and pathological bearings.

Dr. F. W. MOTT instantly secured the attention of the large audience assembled by stating quite plainly that he was not a total abstainer and that he took wine with his dinner, remarking that wine maketh glad the heart of man. He was glad to understand that Sir Victor Horsley advocated temperance rather than total abstinence because it was more likely that the object of the meeting would be secured by that means. Dr. Mott said he would like to know that there was some possibility of obtaining pure wine that was not adulterated with impure spirit. The evils of alcoholism were increased by the fact that pure wine was being replaced by fuchsine water and adulterated with cream of tartar and strong raw spirit distilled from vegetable refuse. Dr. Mott quoted the opinion of Liebig that pure wine was a restorative and means of refreshment that was unsurpassed by any product in nature or art. Incidentally the speaker warned the public against thinking that burgundy was a harmlessly light beverage. He next proceeded to show how alcohol acted upon different people in different ways. 20 per cent. of the admissions to the London County Council Asylums were due to drink. Exact knowledge regarding alcohol should be widely circulated among medical men so that care should be exercised in ordering stimulants. He condemned the administration of alcohol in an indiscriminate manner and urged that it should not be ordered as a routine measure but should only be given when the condition of the pulse indicated necessity for its use.

Professor G. SIMS WOODHEAD welcomed what had fallen from Dr. Mott. They did not wish people to be compelled to be abstainers but they desired to have the opportunity of giving instruction in regard to the effects of alcohol. In that manner there would be a great number of people convinced who would aid in the movement. They had all read in the columns of THE LANCET about the difficulty of procuring pure wine, pure spirit, and pure beer. The demand for highly flavoured and strong beverages was so great that those who had to meet the demand had recourse to means and measures that were quite unjustifiable.

Mr. A. PEARCE GOULD said that if they wanted to make people sober and as wise as Dr. Mott in the matter of alcohol they must instil the necessary information into the minds of the young from very early days.

After Dr. E. SYMES-THOMPSON had said a few words and others had taken part in the discussion the meeting came to an end with a vote of thanks to the Chairman.

Looking Back.

FROM

THE LANCET, *SATURDAY*, March 31, 1827.

MEDICAL HISTORY furnishes abundant examples of the perpetuation of error through prejudice and ignorance, and of the opposition which the most palpable truths have experienced, from men desirous of being regarded as medical philosophers. We may refer, by way of illustration, to the tenacity with which the Brunonian system was so long defended against all the evidence of common sense, and to the reluctance with which it has been forsaken. No system was more plausible at first sight, or better calculated to entrap the unwary: it procured proselytes by its simplicity, and its speciousness deceived those whose time, or want of inclination, did not allow of an immediate scrutiny into its absurdities. At the time of its appearance medical opinion lay prostrate before the chairs of Cullen, Hoffman, and Stahl, or, in other words, medicine was smothered with a scholastic jargon, which even its teachers acknowledged they did not understand. In this state of uncertainty the ingenious hypothesis which reduced diseases into two great classes, and the treatment into an equally simple division, was caught at with avidity, and spread from country to country, until all Europe was desolated with a doctrine which destroyed former errors, by substituting others still more dangerous and absurd. For a time Brunonianism flourished; scarcely a medical school existed, in which it was not publicly taught; and scarcely could a practitioner of eminence be found, who, if he did not vindicate, insensibly fell into its incendiary practice. It was in the full stream of popularity, in France, when Broussais entered his protest against it, and warned his countrymen of the errors they were committing. This was first done about twenty years

ago; and although it is difficult to make the voice of one man heard in a multitude, it must afford great satisfaction to that individual, to perceive that his remonstrances served to check the progress of that infatuation, whilst the gradual increase of the opinions he advocated, appears to show that the arguments on which they rested were satisfactory and convincing, that they were, in short, founded in truth.[1]

KING EDWARD'S HOSPITAL FUND FOR LONDON.

THE annual meeting of the General Council of King Edward's Hospital Fund for London was held at Marlborough House on Wednesday, March 29th, H.R.H. the PRINCE OF WALES, President of the Fund, being in the chair, and an influential and representative group of the Council being present.

The minutes of the previous meeting having been read and confirmed,

Lord ROTHSCHILD, the treasurer of the Fund, in presenting the accounts for the year 1904, said that the total amount received by the Fund had been £99,088. £2141 were the amount of the expenses of carrying on the work, which was equal to only £2 3*s*. 2*d*. per cent. on the money received during the year. Of the £99,088, £80,000 were distributed to hospitals and convalescent homes, £13,153 of the available balance represented funds to be held as capital, and £3793 were carried forward. Though this was a very satisfactory condition of affairs he should only be too glad if instead of £99,000 they had £200,000 to deal with. The balance sheet was very satisfactory. On Dec. 31st, 1904, after distributing £80,000, they had investments valued at £664,256 standing in the names of the trustees and £16,547 at the bankers. It might be of interest to compare the results of previous years. In 1897 the annual subscriptions were £21,443, in 1904 they amounted to £33,316, an increase of £12,000. They received in 1897 £21,161 on capital account and virtually nothing in 1904, but in 1902 they received £400,000 for capital. In their first year they distributed £56,826, while last year they were able to distribute £80,000. He desired to express his humble testimony of the marvellous work which the members of the executive committee did in carrying out the wishes of the President.

The PRINCE OF WALES having moved the adoption of the account of receipts and expenditure, the motion was carried unanimously.

Sir SAVILE CROSSLEY then read the report of the General Council for the year 1904, which showed the total income of the Fund from general sources to amount to £85,202 14*s*. 5*d*., there being also received £12 19*s*. 5*d*., on capital account; and £13,873 3*s*. 6*d*. for the "Additional £14,000 Permanent Income Fund." Gratifying support had been received and the Council was able to carry forward a surplus of about £3000, after distributing £80,000. For this result he especially thanked the voluntary workers of the League of Mercy who had contributed so much towards the increasing success of the Fund. The Council regretted that it was unable to raise the sum (equal to at least £300,000) which was necessary in order to enable His Royal Highness, the President, to take advantage of the munificent offer of an anonymous donor announced in March last, but in a year during which so many other pressing appeals were before the public the task was beyond their powers. By the invitation of His Royal Highness the President, Mr. Edgar Speyer had been added to the General Council and Mr. J. Danvers Power appointed one of the honorary secretaries. Every eligible hospital which applied for a grant was inspected and reported upon and the Council had steadily discouraged any efforts to increase the number of small special hospitals in London. A statistical report dealing with the expenditure of the 16 largest general hospitals had been prepared in order to supply from a central source information as to expenditure and prices. He concluded by alluding briefly to the appointment of Sir Edward's Fry's Committee, whose report had not been received up to Dec. 31st, but has since obtained wide publicity.

The PRINCE OF WALES, in moving the adoption of the report, began by referring to finance. Having reviewed the figures already given he said that the amounts due from small sums, though so valuable in the aggregate, had not shown the same increase as the contributions of large sums and that the Council attached great importance to adding to the number of their subscribers. "I am, however," he added, "especially grateful for the munificence of my ever-generous friend, Lord Mount-Stephen, whose gift of securities to the value of £200,000 was announced after the accounts for 1904 were closed. I also wish to acknowledge with sincere thanks the conditional offer received from Mr. Marshall, which will be equivalent to a gift of £12,000 if his condition is complied with. This condition has reference to our immediate aim, which is to assure for the Fund a permanent income from investments—apart altogether from subscriptions and donations—of £50,000 per annum. With this sum we could practically make sure of being able to distribute £100,000 a year among the London hospitals. Lord Mount-Stephen's gift brought us to within a capital sum of £30,000 of this goal. Mr. Marshall's offer provides £12,000 of this amount. Sir Charles Tennant has given us £3000 to capital, so that only £15,000 are required by July 31st to enable us to accomplish our object. But even then we shall not rest on our oars. The King, in his letter written at the inauguration of the Fund, stated that a sum of from £100,000 to £150,000 were required annually to place the hospitals on a sound financial basis. Since then the population of London has grown, its building area has been enlarged, and hospital requirements have increased. To meet these growing demands I am convinced that our aim must be to provide from the King's Fund an income from all sources which will permit of an annual distribution among the London Hospitals of at least £150,000 a year. This was the original intention of the King when he initiated the Fund and my earnest efforts will be directed towards the fulfilment of that object, which is as near as ever to the heart of the founder. I confidently trust that others will come forward to help us. That their money will be well bestowed they may rest assured and it is most satisfactory to know that the expenses of the Fund are only a little over 2 per cent. on the total amount collected, in spite of the increased work we are now undertaking in different directions." His Royal Highness then alluded to the necessity of the amalgamation of small special hospitals, the present number and position of the various hospitals in London being, to a great extent, the result of chance efforts. From this subject he passed naturally to that of hospital economies, concerning which he said that it was satisfactory to find that in the great majority of cases the efforts of the Fund had been received entirely in the spirit in which they were made. His Royal Highness next made extended allusion to the report of the Medical Schools Committee, consisting of Sir Edward Fry, chairman, the Bishop of Stepney, and Lord Welby. The report, he pointed out, showed that of the 12 hospitals which have medical schools, at least eight contributed from their funds to the support of medical education, while the Committee "do not find that any special considerations have been advanced in justification of the expenditure by the hospitals on the schools." His Royal Highness proposed that the Council of the Fund should begin to act on the report with the first complete year after its publication—that is, in 1906—the hospitals thus having nine months in which to consider their position. "All that we will ask," he said, "is that the whole of the grants from the King's Fund may go to the relief of the sick poor. If a general account is kept for that exclusive purpose, out of which only hospital payments are made, and into which all ordinary receipts for the general funds of the hospital are paid, then we are satisfied to make our grants to that account. While this subject of medical schools remained in doubt, while we were assured that for various reasons it was in the interests of the sick poor that the hospitals should assist in maintaining the schools, we were entitled to accept that view and we did so. But now that we have in our hands the report of Sir Edward Fry's Committee we are bound to act upon its

[1] Extract from the opening words of reviews of the following works:—*Examen de la Doctrine Medicale generalement adoptée et des Systemes Modernes de Nosologie*, &c. Par F. J. V. BROUSSAIS. 8vo, p. 475. Paris, 1816. *Histoire des Phlegmasies ou Inflammations Chroniques*, &c. Par F. J. V. BROUSSAIS. Par s, 1826. (Troisieme Edition.) *Exposition des Principes de la Nouvelle Doctrine Medicale*, &c. Par J. M. GOUPIL. 8vo, p. 622. Bailliere. Paris, 1824. *Pyretologie Physiologique ou Traité des Fievres Considerées dans l'Esprit de la Nouvelle Doctrine Medicale*. Par P. G. BOISSEAU. 8vo, p. 722. Bailliere. Paris, 1826. Trois. Edition.)

recommendations and to reconsider the policy which we have hitherto followed." His Royal Highness considered that such action would be of benefit not only to the hospitals themselves but to medical education as well, and he quoted with approval the statutes of the University of London directing the Senate to secure common courses of instruction for internal medical students in the preliminary and intermediate portion of their studies under appointed or recognised teachers at one or more centres. "I am glad," he said, "to know that the Senate has already put forward a scheme for the establishment of an Institute of Medical Sciences in connexion with the University of London. It is to be hoped that the public will generously support the appeal which has been made for the funds necessary to build and equip such an institute." He concluded an admirable address by congratulating all his colleagues upon the results of the year's work.

Mr. JOHN TWEEDY (President of the Royal College of Surgeons of England) personally agreed with His Royal Highness that if this separation were effected not only would it benefit the hospitals as medical charities but he was confident that it would benefit medical education as well. The two parts of medical studies were quite separate. The preliminary science studies and studies such as anatomy and physiology were entirely distinct from the clinical studies. He hoped that, if not within the next year, certainly as soon as practicable, this important separation would be carried out and then in London they would have medical education placed upon a proper footing.

Mr. E. A. CORNWALL (Chairman of the London County Council) having testified to the enormous advantages conferred upon the poor citizens of London by the beneficence of King Edward's Hospital Fund,

The Rev. T. BOWMAN STEPHENSON, D.D., moved a vote of thanks in eloquent terms to the Prince of Wales for presiding.

Sir WILLIAM COLLINS, in seconding the vote of thanks, said that he must say he agreed with Dr. Stephenson in saying that it would be absolutely impossible to over estimate the value of the interest and support of His Royal Highness in the working of the Fund.

The vote having been carried by acclamation, the proceedings terminated with a few words of acknowledgment from the PRINCE OF WALES.

Public Health and Poor Law.

LOCAL GOVERNMENT BOARD.

REPORTS OF INSPECTORS OF THE MEDICAL DEPARTMENT OF THE LOCAL GOVERNMENT BOARD.

On an Outbreak of Enteric Fever at the Villages of Eddlesborough and Eaton Bray, by Dr. R. DEANE SWEETING.[1]—Dr. Sweeting gives an account of a small outbreak of enteric fever which occurred last summer in a village which lies between Leighton Buzzard and Dunstable. Part of this village is in Buckinghamshire and is termed Eddlesborough (population 400), the rest of the village, Eaton Bray, with a population of 1000, is in Bedfordshire. Between July 9th and August 19th 33 cases of enteric fever were notified, most of those attacked living in the Eddlesborough portion of the village. Other cases occurred during this period which appear to have been enteric fever although they were not notified as such to the sanitary authority. After August 19th eight additional cases were notified but these in all but one instance were secondary to cases which had already occurred in their families. The case mortality was comparatively low and only three deaths occurred. The cause of the outbreak is shown by Dr. Sweeting to have been the well at Eddlesborough national school. 27 out of the 33 cases notified between July 9th and August 19th were children attending this school. In families which contributed more than one case the earliest attacks were nearly always in school children. The well which supplied the school-house pump with water could not at first be found but eventually it was discovered on digging within two feet of the site of a heap of decomposing excrement from the school privies which had been accumulating there for some weeks before the outbreak of enteric fever and had been removed only after this had begun. It proved to be a shallow well unprotected from surface soakage. Many of the shallow wells in Eddlesborough and Eaton Bray are subject to similar risks of dangerous pollution. The district council of Eaton Bray in 1898 obtained sanction to incur a loan for a public water-supply to the village but had not carried out the work proposed. In view of this recent outbreak and of Dr. Sweeting's report it may be hoped that the Local Government Board, which has already obtained an order of mandamus against this council for its neglect to provide sewerage in Eaton Bray, will now insist as strongly on prompt measures being taken by the local authorities concerned to secure a satisfactory public supply of water for the whole of the village in question.

On the Sanitary Circumstances and Administration of the Borough of Beverley, with Special Reference to the Recent Prevalence of Enteric Fever and Diarrhœa in the Borough, by Dr. REGINALD A. FARRAR.[2]—In the town of Beverley, in the East Riding of Yorkshire (population 13,183), an epidemic of diarrhœa affecting from 200 to 400 persons occurred between April 28th and the end of May, 1904. On the abatement of this epidemic an outbreak of enteric fever followed, the first case of this disease being notified on May 26th and the total number of cases being 32. Only one-third of Beverley is supplied by the Beverley Waterworks Company; the rest obtains water from boreholes sunk to an average depth of from 70 to 80 feet into the chalk beneath the town. Those attacked by the epidemic diarrhœa and enteric fever in nearly all cases were people who lived in houses supplied by the waterworks company or who drank water from this public supply at their places of occupation or elsewhere. The public supply in question is obtained by pumping from a deep well in the chalk 333 feet deep. The chalk in the neighbourhood of the waterworks is much fissured and evidence had been obtained in previous years that contaminating matters deposited on the surface of the ground at considerable distances from the well might find their way into the supply. This was shown in 1885 by the late Dr. David Page and in 1890 Mr. Baldwin Latham demonstrated that lithia placed in a "swallow hole" to the west of the well made its appearance in the well water. Although the waterworks company had taken steps to prevent pollution occurring at the points indicated by Dr. Page and Mr. Baldwin Latham, they had allowed other possible opportunities of contamination to remain. Dr. Farrar points out two places as sources of danger—the farmstead of Bentley New Inn, about three-quarters of a mile south of the waterworks, and a drain situated from three-quarters of a mile to one and a half miles from the waterworks, which receives the sewage of Walkington village. At Bentley New Inn six persons were attacked by acute diarrhœa on March 8th. In connexion with the probable relationship between these cases and the epidemic of diarrhœa which began in Beverley on April 28th Dr. Farrar records that after a comparatively rainless period heavy rainfall amounting to 0·62 of an inch occurred on April 12th and 15th. It would seem that there have now been at least three definite outbreaks of enteric fever which have been attributed to this water-supply. After each outbreak some new source or sources of pollution have been discovered and dealt with and the company can hardly hope that it can obtain entire security for the future by giving its attention to the two places which on this occasion are indicated as dangerous. Filtration of a deep well water is an unusual proceeding but if the present source of supply is to be continued filtration of the water, which Dr. Farrar proposes, seems to be a necessary safeguard. It is true that the character of the water would possibly make it difficult to obtain a satisfactory scum on the surface of the filters but this difficulty, if realised, could no doubt be overcome by suitable means. The precedence of the outbreak of enteric fever by one of acute diarrhœa is a matter of special interest in this epidemic. Those attacked by enteric fever had in most cases suffered from the epidemic of diarrhœa a few weeks before; in fact, the conditions appear to have been closely parallel in this respect to those of outbreaks of enteric fever caused by sewage-polluted shell-fish.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

IN 76 of the largest English towns 8985 births and 4752 deaths were registered during the week ending March 25th.

[1] London, Eyre and Spottiswoode, East Harding-street; Edinburgh, Oliver and Boyd; Dublin, E. Ponsonby. Price 3d.

[2] Ibid., price 4d.

The annual rate of mortality in these towns, which had been 17·1, 17·2, and 15·8 per 1000 in the three preceding weeks, rose again last week to 15·9 per 1000. In London the death-rate was 15·3 per 1000, while it averaged 16·1 per 1000 in the 75 other large towns. The lowest death-rates in these towns were 7·5 in Smethwick and in Wallasey, 7·6 in Handsworth (Staffs.), 8·5 in Walthamstow, 8·7 in Hornsey, 10·0 in Great Yarmouth, 10·4 in Cardiff, and 10·5 in King's Norton and in Rotherham; the highest rates were 22·7 in Southampton, 22·9 in Stockton-on-Tees, 23·0 in Nottingham, 23·8 in Plymouth, 25·8 in Hanley, 27·6 in Portsmouth, and 28·9 in Merthyr Tydfil. The 4752 deaths in these towns last week included 494 which were referred to the principal infectious diseases, against 486, 471, and 430 in the three preceding weeks; of these 494 deaths, 210 resulted from measles, 97 from whooping-cough, 70 from diphtheria, 54 from scarlet fever, 43 from diarrhœa, 17 from "fever" (principally enteric), and three from small-pox. No death from any of these diseases was registered last week in Leyton, Bournemouth, Ipswich, Great Yarmouth, Devonport, or Walsall; while they caused the highest death-rates in Portsmouth, Southampton, Reading, Hanley, Nottingham, Stockton-on-Tees, and Merthyr Tydfil. The greatest proportional mortality from measles occurred in Portsmouth, Southampton, Reading, Nottingham, St. Helens, Warrington, Sheffield, Middlesbrough, Stockton-on-Tees, and Merthyr Tydfil; from scarlet fever in Rochdale and Merthyr Tydfil; from diphtheria in Hanley, Burton-on-Trent, Derby, and Middlesbrough; from whooping-cough in Willesden, Tottenham, Hanley, Preston, Rotherham, and Tynemouth; and from "fever" in West Bromwich. Two fatal cases of small-pox were recorded in London and one in Bury, but none in any other of the 76 large towns. The number of small-pox cases under treatment in the Metropolitan Asylums Hospitals, which had been 15, 16, and 23 at the end of the three preceding weeks, had declined again to 20 at the end of last week; three new cases were admitted during the week, against four, three, and nine in the three preceding weeks. The number of scarlet fever patients in these hospitals and in the London Fever Hospital on Saturday, March 25th, was 2034, against 2002, 2036, and 2042 on the three preceding Saturdays; 274 new cases were admitted during the week, against 290, 303, and 262 in the three preceding weeks. The deaths in London referred to pneumonia and diseases of the respiratory system, which had been 353, 361, and 304 in the three preceding weeks, were again 304 last week, and were 79 below the number in the corresponding period of last year. The causes of 44, or 0·9 per cent., of the deaths in the 76 towns last week were not certified either by a registered medical practitioner or by a coroner. All the causes of death were duly certified in West Ham, Bristol, Leicester, Nottingham, Bradford, Leeds, Hull, and in 49 other smaller towns; the largest proportions of uncertified deaths were registered in Reading, Burton-on-Trent, Birmingham, Liverpool, Warrington, and Manchester.

HEALTH OF SCOTCH TOWNS.

The annual rate of mortality in eight of the principal Scotch towns, which had been 17·4, 18·6, and 18·2 per 1000 in the three preceding weeks, rose again to 18·3 per 1000 during the week ending March 25th, and was 2·4 per 1000 in excess of the mean rate during the same period in the 76 large English towns. The rates in the eight Scotch towns ranged from 15·4 in Leith and 17·2 in Glasgow, 21·5 in Aberdeen and 26·0 in Greenock. The 615 deaths in these towns last week included 33 which were referred to whooping-cough, 10 to diphtheria, eight to diarrhœa, six to measles, one to scarlet fever, and one to "fever." In all, 59 deaths resulted from these principal infectious diseases last week, against 60, 58, and 52 in the three preceding weeks. These 59 deaths were equal to an annual rate of 1·8 per 1000, which was slightly above the mean rate last week from the same diseases in the 76 large English towns. The fatal cases of whooping-cough, which had been 27, 31, and 17 in the three preceding weeks, rose again last week to 33, of which 16 were registered in Glasgow, five in Edinburgh, four in Greenock, two in Dundee, two in Paisley, and two in Perth. The deaths from diphtheria, which had been three, two, and eight in the three preceding weeks, further rose to ten last week and included four in Glasgow, four in Edinburgh, and two in Greenock. The fatal cases of diarrhœa, which had been 17 and 13 in the two preceding weeks, further declined last week to eight, of which five occurred in Glasgow. The deaths from measles, which had been eight, six, and ten in the three preceding weeks, declined again to six last week, and included three in Glasgow and two in Edinburgh. The deaths referred to diseases of the respiratory organs in these towns, which had been 114, 153, and 140 in the three preceding weeks, further declined to 133 last week, and were 32 below the number in the corresponding period of last year. The causes of nine, or 1·5 per cent., of the deaths registered in these eight towns last week were not certified.

HEALTH OF DUBLIN.

The death-rate in Dublin, which had been 30·7, 25·2, and 23·8 per 1000 in the three preceding weeks, further declined to 22·4 per 1000 during the week ending March 25th. During the past four weeks the death-rate has averaged 25·5 per 1000, the rate during the same period being 16·3 per 1000 both in London and in Edinburgh. The 163 deaths of persons belonging to Dublin registered during the week under notice showed a decline of 10 from the number in the preceding week, and included seven which were referred to the principal infectious diseases, against eight, two, and eight in the three preceding weeks; of these, four resulted from measles, one from whooping-cough, one from "fever," and one from diarrhœa, but not any from small-pox scarlet fever, or diphtheria. These seven deaths were equal to an annual rate of 1·0 per 1000, the death-rates last week from the principal infectious diseases being 1·7 in London and 1·9 in Edinburgh. The fatal cases of measles, which had been three, one, and four in the three preceding weeks, were again four last week. The 163 deaths in Dublin last week included 25 of children under one year of age and 49 of persons aged 60 years and upwards; the deaths of infants showed a slight decline while those of elderly persons were in excess of the number in the preceding week. Four inquest cases and three deaths from violence were registered; and 58, or more than a third, of the deaths occurred in public institutions. The causes of nine, or nearly 6 per cent., of the deaths registered in Dublin last week were not certified.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

THE following appointments are notified:—Staff Surgeon S. T. Reid to the *President*, additional, for three months' hospital course. Surgeons: R. Willan, E. D. Rutherford, M. W. Haydon, and R. H. McGiffin to the *Pembroke*, additional; H. M. Braithwaite, D. G. Addison-Scott, and L. C. Hunt to the *Victory;* H. S. Turner and S. H. Vickery to the *Vivid;* P. D. McI. Campbell, F. G. Wilson, J. McA. Holmes, A. O. Hooper, and E. M. W. Hearn to the *Wildfire;* and A. J. MacDiarmid to the *Pembroke*, all for disposal; W. H. Pope to the *Fire Queen*, for disposal; W. C. B. Smith, F. L. de Verteuil, F. Hernaman-Johnson, and C. R. Worthington to the *Vivid*, to be lent to Plymouth Hospital.

The undermentioned gentlemen have been appointed Dental Surgeons to the Naval Forces and have been appointed for duty at Chatham, Portsmouth, and Plymouth respectively:—Mr. Victor Edwin Mills, Mr. Bannar Harry Martin, and Mr. Albert Harris.

ROYAL ARMY MEDICAL CORPS.

Major E. Eckersley joins at Woolwich for duty. Major C. E. Pollock, Royal Herbert Hospital, Woolwich, has embarked in the transport *Dilwara* for duty at Malta. Major T. Birt has been posted to the Eastern Command for duty. Major J. C. Connor has been appointed for duty in the Southern Command.

ROYAL ARMY MEDICAL CORPS (MILITIA).

Daniel Vere Maxwell Adams to be Lieutenant (dated March 25th, 1905).

INDIAN MEDICAL SERVICE.

Bengal: To be Colonel: Lieutenant-Colonel Henry Kellock McKay, C.I.E. (dated Dec. 3rd, 1904).

VOLUNTEER CORPS.

Royal Garrison Artillery (Volunteers): 8th Lancashire: Surgeon-Lieutenant-Colonel A. R. Hopper resigns his commission and is granted the honorary rank of Surgeon-Colonel, with permission to wear the prescribed uniform (dated March 29th, 1905).

Rifle: 2nd (Hertfordshire) Volunteer Battalion the Bedfordshire Regiment: Surgeon-Lieutenant J. B. McBride to be Surgeon-Captain (dated March 25th, 1905). 1st Volunteer Battalion the Royal Welsh Fusiliers: Surgeon-Lieutenant W. F. Byford resigns his commission (dated March 29th, 1905). 4th Middlesex (West London): Surgeon-Lieutenant-Colonel A. Clark (Brigade-Surgeon-Lieutenant-Colonel, Senior Medical Officer, 3rd London Volunteer Infantry Brigade), is granted the honorary rank of Surgeon-Colonel (dated March 14th, 1905). 2nd Volunteer Battalion the Sherwood Foresters (Nottinghamshire and Derbyshire Regiment): Surgeon-Captain W. Moxon resigns his commission and is granted the honorary rank of Surgeon-Major, with permission to wear the prescribed uniform (dated March 29th, 1905). Surgeon-Lieutenant V. J. Greenhough to be Surgeon-Captain (dated March 29th, 1905). 2nd (Westmoreland) Volunteer Battalion the Border Regiment: Surgeon-Major G. W. Brumwell (Brigade-Surgeon-Lieutenant-Colonel, Senior Medical Officer, Lancaster and Border Volunteer Infantry Brigade), to be Surgeon-Lieutenant-Colonel (dated March 25th, 1905). Surgeon-Lieutenant-Colonel G. W. Brumwell (Brigade-Surgeon-Lieutenant-Colonel, Senior Medical Officer, Lancaster and Border Volunteer Infantry Brigade), is granted the honorary rank of Surgeon-Colonel (dated March 25th, 1905). 1st Volunteer Battalion the Northamptonshire Regiment: Charles Humphrey Sedgwick to be Surgeon-Lieutenant (dated March 25th, 1905). 2nd Volunteer Battalion the Queen's Own (Royal West Kent Regiment): Surgeon-Major H. W. Roberts to be Surgeon-Lieutenant-Colonel (dated March 25th, 1905).

DEATHS IN THE SERVICES.

Lieutenant-Colonel Henry William Alexander Mackinnon, D.S.O., A.M.S. (retired), on March 24th, at Weybridge, Surrey, aged 63 years. He joined the Army Medical Service in 1865, became surgeon in 1873, surgeon-major in 1877, brigade-surgeon in 1885, deputy-surgeon-general in 1892, and retired in 1895. He served in the Egyptian war of 1882 and was present at the battle of Tel-el-Kebir, when he was slightly wounded (medal with clasp and the Khedive's star). In the Burmese expedition in 1885-86 he served with the Upper Burma Field Force under Sir George White and was for part of the time principal medical officer (mentioned in despatches, D.S.O., and medal with clasp).

Miss Jane Catherine Shaw Stewart, eldest daughter of Sir Michael Shaw Stewart, sixth Baronet, who died on March 14th at Slinfold, Sussex, at the age of 83 years, was associated with Miss Florence Nightingale in active nursing work in the military hospitals in the Crimea and at the close of the war she was appointed matron-superintendent of Netley Hospital, in which capacity she served till 1868. Miss Shaw Stewart was for some time second Superintendent-General of Her late Majesty's Nurses.

THE ARMY ESTIMATES.

The attention of our readers connected with, or interested in, Army Medical Service matters will very naturally have been drawn to Mr. Arnold-Forster's recent statement on the Army Estimates in the House of Commons. The War Minister was as confident as is his wont as to the importance of his proposals for the reorganisation and reform of the army as a whole and as to the success which would attend and follow upon their adoption. Be this as it may, and it seems clear that he failed to carry conviction to the House on the point, we can only say that uncommonly little can be gathered from what he had to state about the medical services. He repeated his previous announcements that substantial additions had been made to the medical staff, without, however, particularising them, and that a commencement had been made in the construction of the great Military Medical College. It is needless to say that a great deal more than this will have to be done if we are ever to have a medical and sanitary organisation at all adapted to the requirements of modern warfare.

THE WAR IN THE FAR EAST.

The lull at the seat of war still continues but such news as there is from Manchuria does not seem to be of a favourable nature as far as the Russians are concerned. Advices from Harbin state that the Japanese continue slowly to advance. The Russian retreat is described as being still toilsome and dangerous. The commissariat and medical services are completely disorganised. Men who were sick or exhausted from fatigue have had to be abandoned for want of proper transport. Although everything depends now upon the possibility of the success of the Russians at sea, for such an event might alter the whole complexion of the war, little or nothing is really known about the position of the Russian or Japanese fleets.

The Army Council has decided to discontinue the experiment, commenced last November, of providing recruits with artificial teeth and the instructions contained in the War Office letter of the 5th of that month have therefore been cancelled as regards both recruits and trained soldiers.

Correspondence.

"Audi alteram partem."

PROPOSED CONFEDERATION OF THE LONDON MEDICAL SOCIETIES.

To the Editors of THE LANCET.

SIRS,—Attempts have been made from time to time to unite the various London societies representing medical science and practice more closely, so as to form a united Royal Society or Academy of Medicine, in which the existing societies would retain their individuality as sections of the united body.

The present appears a favourable opportunity for again endeavouring to effect this unification, and I have gathered from many holding influential positions in the different societies that they would not object to such a confederation being again considered. I have therefore consented to preside at a meeting to be held at the Royal College of Physicians on Monday, April 10th, at 5 P.M., to consider whether it is desirable that the central medical societies of London should unite to form one Royal Society or Academy of Medicine; and, if such union is thought desirable, to take preliminary steps to bring about such federation.

The meeting is open to Fellows and members of all medical societies and it is hoped that there may be a large and representative meeting, as it is desired to gather the opinion of the profession and especially of the junior members of it, as well as that of those who are officially associated with the several societies.

I am, Sirs, yours faithfully,

March 28th, 1905. W. S. CHURCH.

THE TREATMENT OF EMPYEMA.

To the Editors of THE LANCET.

SIRS,—In THE LANCET of March 25th, p. 789, Dr. Samuel West, who speaks with the authority derived from great experience, lays down the law very positively about the surgical treatment of empyema and makes statements with which I, and I expect other surgeons, cannot agree. They do not, in my opinion, tend to improve the treatment of this disease. He says: "In a case where the choice is open the best place to select is just in front of the post-axillary border and on the transverse level of the nipple. It need not be farther down, because directly the pleura is evacuated the diaphragm rises and soon reaches that level. It need not be farther back, because the patient will not lie upon the tube and with the incision in this place he can lie comfortably on the back. If the incision be farther back the patient will turn over on to the opposite side and the drainage will be no better than with the incision in the place I recommend." The directions for the incision are not very accurate. The position of the nipple varies in different individuals and is elevated about one inch by raising the arm. If Dr. West's instructions are followed the opening will sometimes be made in the fourth interspace. But in any case it is, in my opinion, too high and too far forward. It never allows

proper drainage when the patient is recumbent, unless he lies on the affected side, and often affords imperfect drainage when he is in the erect posture, because, as a matter of fact, the diaphragm seldom comes into contact with the ribs at so high a level in the side. I have often had to make a posterior incision in cases thus operated on. I believe this position was originally chosen (or rather the sixth or seventh interspace in the axilla) because it was the most easy to get at. I think the best place for the opening is through the ninth rib in the scapular line: (1) because it is the most dependent place both when the patient is recumbent and when he is erect; (2) because I do not find that patients object to lying on the back after its performance; and (3) because it seems to me to give by far the best results.

Resection of a piece of rib is not recommended *only* because it provides good drainage, though this is an important object. It allows a free exploration of the cavity and the easy removal of masses of lymph. It also generally prevents the painful gripping of the tube as contraction takes place. No one says that it is always essential, but really Dr. West and some others make too much of this trivial addition to the opening of the chest. It adds practically nothing to the gravity of the operation.

When I hear about shortening the tube in a case of empyema and the tube "preventing the discharge" I feel convinced that too long a tube was employed to begin with. An ideal tube, in my opinion, should be only just long enough not to slip out of the pleural cavity and have one lateral hole only, which should be immediately within the chest wall. It is only in exceptional cases with intricate diverticula that cannot be freely opened up with the finger that long tubes are required. Shortening drainage-tubes in these cases I look upon as a secondary vice induced by the primary one of using too long a one at first. The plan of introducing many inches of drainage-tube is, or ought to be, obsolete. Dr. West talks of two small tubes being as efficacious as one large one; may I recommend him to try two large ones and see if they are not more efficacious still?

Of course, Dr. West knows of Dr. W. Cayley's paper on "Convulsions and Death following the Washing Out of the Pleural Cavity in Empyema" in vol. x. of the Transactions of the Clinical Society. I have seen a case of sudden death in such circumstances *meis propriis oculis;* it was not a pleasant sight. Still, the experience of "many hundred cases" without an accident is large. It makes me hesitate to enter the lists, as it must represent an experience much greater than mine, for I suppose Dr. West will agree that in most cases irrigation is unnecessary. And if unnecessary why add this complication to the dressing if there be even the slightest risk involved in it? After all what a small part of a general empyema can be satisfactorily reached by irrigation unless the cavity be actually filled with the fluid employed for this purpose!

He says: "Estlander's operation is very fatal." This is not my experience if the surgeon does not attempt to do the whole thing at one sitting. That is where the danger comes in. If it be divided into two or three stages, separated by considerable intervals of time, the danger is slight and probably less will have to be done in the end.

Of course, Dr. West will not expect me to agree with him that "the after-treatment of an empyema is better left to the physician than the surgeon," especially if this involves daily irrigation, rapid shortening of the drainage-tube, and probing the cavity every few days.

I am, Sirs, yours faithfully,

March 27th, 1905. RICKMAN J. GODLEE.

SHOCK AND COLLAPSE.

To the Editors of THE LANCET.

SIRS,—Mr. J. P. Lockhart Mummery in his second lecture on Surgical Shock and Collapse[1] suggests the treatment of shock by compressed air wards. In his first lecture he states that "the blood pressure is maintained within a few degrees of the normal range even under extreme variations in outside pressure."[2] It is difficult, therefore, to see in what way the proposed compressed air treatment is to take effect. Mr. Mummery does not draw any distinction between the *absolute* and the *relative* blood pressure. It is the relative blood pressure—that is, the blood pressure compared with the external atmospheric pressure—which is the important factor in the pathology of shock and it is this relative pressure that is recorded in all forms of recording instruments. Alterations in the external atmospheric pressure produce corresponding alterations in the absolute blood pressure but do not materially alter the relative pressure and would not, therefore, be of much value in the treatment of shock. On the other hand, compression of the abdomen—as by the pneumatic suit described by Mr. Mummery in which the head and thorax are not compressed—will raise the relative blood pressure by driving the blood from the dilated splanchnic vessels into the more important areas of the head and chest. It is this form of treatment, therefore, which is of value in cases of shock rather than treatment in compressed air wards.—I am, Sirs, yours faithfully,

CHARLES POWELL WHITE.

St. Thomas's Hospital, S.E., March 27th, 1905.

[1] THE LANCET, March 25th, 1905, p. 782.
[2] THE LANCET, March 18th, p. 696.

ISOLATION HOSPITALS.

To the Editors of THE LANCET.

SIRS,—May I be allowed to reply to Mr. E. D. Marriott's letter of Dec. 24th, 1904, published in THE LANCET of Jan. 7th, 1905, in order to remove a slight misunderstanding on his part? The priority that I claimed was that of utterance of my opinions *in your columns*, as will be made evident, I think, by collating my letter (published in your issue of Dec. 17th, 1904, p. 1737) with your leading article of August 27th, 1904, p. 624, on which my letter commented; and I consider that my claim is justified. Your phrase implied that Mr. Marriott was the first person to express disapprobation of isolation hospitals in THE LANCET and I ventured to correct this in my own behalf. Further, if Mr. Marriott will look back to my original letter in THE LANCET of June 13th, 1896, he will see that I had *not* "contented myself with a letter in THE LANCET" but had been for some time contesting with the local board of guardians (St. George's, Hanover-square) and its medical officer of health (the late Dr. W. H. Corfield) and his sanitary inspector the right of these officials to remove scarlet fever patients to the fever hospitals indiscriminately, even contrarily to the wish of the relatives and of the medical man in attendance. I appealed to the Local Government Board and obtained a decision in my favour. The purport of my letter was to publish an account of this dispute with the result; and I also stated my experience of the effects of the infectious diseases hospitals of the Metropolitan Asylums Board. I am glad to hear that Mr. Marriott has been engaged with the question as long as he has been and that he is still carrying on the fight; but his previous writings on the subject were quite unknown to me.

I am, Sirs, yours faithfully,

F. LUCAS BENHAM, M.D. Lond.

Exeter, South Australia, Feb. 10th, 1905.

THE MEDICAL MAN AS EXPERT WITNESS.

To the Editors of THE LANCET.

SIRS,—*Apropos* to Dr. W. B. Ransom's interesting paper on the medical man as an expert witness, in THE LANCET of March 4th, p. 591, will you kindly allow me to point out that the medical witness is frequently not an expert at all; that he is called in by, and employed by, the prosecution; is expected to assist the police in order to secure a conviction; and that, as the crime cannot be reconstituted, it is impossible to appeal against his decision? It must be admitted that this is a very dangerous state of affairs; the prisoner or accused or suspected person ought always to be represented at these investigations by another medical man, practitioner, or expert in the first instance, before the body is buried, if it is a case of death, or the symptoms or condition which are supposed to indicate guilt on the part of the accused have passed off. I recollect a case where a woman was declared to have died from the effects of an illegal operation. Fortunately, the friends were able to employ another practitioner who completed the post-mortem examination by opening the skull and so ascertained that the patient had died from apoplexy. The Grimsby starvation case is another instance in point. Here the symptoms of death from starvation of the prisoner's wife were conspicuously absent and yet the man was convicted and got 20 years' penal servitude, some portion of which he had served when he was rescued by a memorial

to the Home Secretary setting forth the facts. It is the same when men have been accused of rape and the decision of the court depends upon the existence or non-existence or recent rupture of the hymen. The medical witness has here a delicate and difficult investigation about which the most eminent jurists have differed. The ordinary practitioner, unused to such cases, cannot, of course, be expected to give evidence of any value and yet his testimony is held sufficient to convict, and as he is the only one present in the first instance there can be no appeal against his decision. It is the same when the fate of the accused depends upon the results of a chemical analysis. If an analyst had been employed on behalf of Mrs. Maybrick he might have found that there was not enough arsenic in the tissues to have caused death or that the amount discovered would readily be accounted for by the medicinal doses which Mr. Maybrick was in the habit of taking. Again, if an expert in handwriting had checked the conclusions arrived at by Mr. Guirin in the Adolf Beck case the latter half of Mr. Guirin's report would not have been suppressed and Mr. Beck would not have been convicted. Again, if an independent expert had examined the horsehair and blood said to have been found upon Mr. Edalji's trousers he might have found that there was no blood or horsehair or that the presence of both might have been sufficiently accounted for without assuming the guilt of the accused.

In short, Sirs, it is impossible to get at the truth without full discussion and hearing of both sides. The medical man is quite right to do the best he can for the person who employs him; he is bound to do for him what he would do for himself if he were able. The prosecution are straining every nerve and resorting to every device in order to secure a conviction quite irrespective of the innocence or guilt of the accused and if the medical expert does not do his very best to save his client he is unworthy of his position and of no use at all. Medicine is not an exact science and never will be and the man who comes into court to expound scientific truth to the laity is expounding something that does not exist. As to Crown referees they would be simply glorified expert witnesses and as we should have no control over them they would be much more dangerous than anything we have at present.

I am, Sirs, yours faithfully,

C. BELL TAYLOR, M.D. Edin.

Nottingham, March 25th, 1905.

THE GOUTY DIATHESIS.

To the Editors of THE LANCET.

SIRS,—Will you kindly allow me to make some remarks on Dr. D. Chalmers Watson's letter which is, in my opinion, rather aggressive? Your correspondent does not deny the fact that the knowledge of the physiology and pathology of the thyroid gland is very incomplete, and, on the other hand, he says that "one is perhaps justified in hesitating to attach much scientific value to Dr. Arany's pronouncement on the results of his clinical experience regarding a relation between gout and the thyroid gland." I daresay my professional and literary reputation is not unknown to members of the profession of both European and American countries, and I do not think that anybody will doubt in the honesty and seriousness of the reports of my observations as well as in my being up to date as far as the literature of gout and thyroid gland is concerned.

In saying that in the series of my cases of gout I did not observe in a single case any symptoms which could have related to changes in the thyroid gland I only referred to symptoms of well-known affections of the thyroid gland, as it goes without saying, we cannot do the same with patients as we do with rats—viz., examine their thyroid gland by means of the knife. As I am going abroad in the course of next week I shall not be able to reply to Dr. Watson's future objections (if there should be any) and therefore consider this my final remark on the subject.

I am, Sirs, yours faithfully,

Royal Societies Club, March 18th, 1905. S. A. ARANY.

URINOSCOPY.

To the Editors of THE LANCET.

SIRS,—There are numerous medicine men throughout South Wales and amongst these, I believe, some qualified chemists "who read the water." These men assume the power of being able to diagnose any and every disease by simply holding up a bottleful of the patient's urine between them and the light and looking through. This is indeed a wonderful power of discernment and a very substantial asset to the fortunate possessor, far exceeding, from a financial standpoint, any medical diploma or degree. On the other hand, considering the few diseases that can be diagnosed from the urine alone I consider the assumption as almost a complete deception of the public or as supplying goods under false pretences and should be investigated by the police with a view to punishment.—I am, Sirs, yours faithfully,

March 25th, 1905. WELSHMAN.

THE MEDICAL CONTROL OF SCHOOLS AT NEW YORK.

(FROM OUR SPECIAL SANITARY COMMISSIONER.)

(*Concluded from p. 884.*)

THE figures already published indicate that the number of children excluded from school was so high as seriously to interfere with the work of education. This was due more especially to the great prevalence of acute disease of the eye and of pediculosis. Yet the board of health insisted that, even at the risk of depopulating the schools, it was its duty to protect children who were clean from any risk of contagion. Nevertheless, the stringency of such regulations was ultimately relaxed. The method now adopted is to send away at once any child who is found with live pediculi. But when the child is under treatment the mere presence of nits while only in the embryonic stage is no longer considered as practically rendering the case contagious. The children under treatment may then attend class but only on condition that their hair is shampooed with kerosene and olive oil. Then later the hair must be thoroughly washed and dried. After this the hair is rubbed with hot vinegar so as to dissolve the shells of the nits and these must be brushed away with a hard brush. A pamphlet with full, clear explanations to this effect is given to each child. At first, however, this relaxation of the rule did not suffice. A great number of the children excluded had no homes where they could be privately but efficiently treated. The public dispensaries where children who did not possess suitable homes could be treated were not sufficiently numerous. Consequently many children remained indefinitely away from school because they could not get attendance, not even the commencement of a proper treatment. At this juncture the Nurses' Settlement came to the assistance of the department of health and sent a nurse to see whether something could not be done in order to enable the children to return to school.

For some six weeks experiments were made and in the year 1902 it was decided that a regular nursing system should be established to look after the children who attend the primary schools. Eight nurses were appointed for children frequenting the schools of what is legally denominated the borough of Manhattan. The mission of these nurses is to attend to children who, though suffering from communicable complaints, are nevertheless admitted to the schools. This permission is granted notably in cases of pediculosis, conjunctivitis, and some forms of disease of the skin. Such relaxation of the rules came into operation on Jan. 1st, 1903. The eight school nurses were placed under the direction of one supervising nurse. The schools were divided into groups and each nurse had to attend several schools. The supervising nurse was held responsible; she was expected to visit each of her nurses while they were at their work and this at least once a week. The school nurses had to keep a record of all the cases which they treated. When a child was excluded from school and did not return on the day appointed the nurse had to call at the child's home and to ascertain the cause of the delay. The nurse had also to instruct the parents as to the proper way of cleansing the children's heads. Definite and precise rules are given to the nurses for the treatment of pediculosis, conjunctivitis, ringworm, impetigo, favus, molluscum contagiosum, scabies, &c. It is the school inspector who remits to the nurse the details of each case and the nurse acts accordingly but these nurses are not allowed to deal with cases of trachoma. The department of education supplies to the schools, on demand from the

principals of the schools, whatever is necessary for the treatment by the nurses of the children. It very soon became evident that the system now instituted involved such an amount of work that the number of school nurses was quite insufficient. Before six weeks had elapsed the staff of nurses had to be doubled and after an increase from eight to 16 nurses there was a further augmentation to 19 nurses. The probabilities are that by this time a still larger number is employed. In any case, the figures given of the work done during the year 1903 show that the position of school nurse is no sinecure. The number of cases treated for pediculosis was 156,886, for contagious diseases of the eye 106,257, for eczema 3379, for ringworm 8498, for scabies 335, and for miscellaneous complaints, including favus, impetigo, and molluscum contagiosum, 10,438. The total number of cases treated is set down at 285,793. Then 12,891 visits were paid to the homes of the pupils, 11,098 visits to the schools, and 293 miscellaneous visits, making in all 24,282 visits.

It soon became evident that these school nurses were destined to render great service apart from the mere treatment of the afflicted children. All kinds of indirect advantages began to accrue from the action of the nurses who, by the force of circumstances, were at times playing the part of missionaries of civilisation. To get a child from a slum dwelling and make him attend an excellent school is already a great step forward. Much of the good this would produce is, however, undone when the child returns home. But now it is not only the child that is sent to school, it is the trained nurse that comes from the school to the child's home. Thus some very practical phases of education are brought to the child's home for the instruction of the parents and family. The action of the school nurses first helped greatly to reduce the number of children excluded from school; thus the care taken of the health of the children no longer seriously interfered with the education of the coming generation. But what is especially beneficent are the visits the nurses pay to the homes of the children, for there they are able to discover and to cause to be removed insanitary conditions and sources of infection from which not only the children but entire families suffered. This gave the nurses splendid opportunities for spreading in a practical and very effective manner a better knowledge of sanitation and the laws of health. Then, again, the children who formerly were excluded on account of ill-health not infrequently became permanent truants. Now a good watch is kept to see first that they are properly treated and secondly that they return to school as soon as it is safe for them to do so.

When once it was decided to admit into the schools a large number of pupils while still under treatment it was necessary to devise a method of watching them very closely. Therefore—and this happened during the course of March, 1904—what is known as the "card index system" was introduced. Each class-room has a card and on it is inscribed the name of each pupil attending that class though suffering from a communicable disease. For this purpose a code number is employed so as not to divulge the complaints of the children. It is from this class card, if no separate and special instruction is given, that the nurse learns who are the pupils she has to treat and what are their complaints. Practice has demonstrated that each child must be taken separately and told individually what he must do. If several children who have the same complaint are grouped together and then told they do not pay sufficient attention, are not duly impressed, and very generally fail to carry out the instructions. The class card also enables the school inspectors to follow out what is being done. For instance, if to a child's name is affixed the indication "under treatment" the school inspector forthwith proceeds to assure himself that there has been proper treatment, and, if not, at once excludes the child. There has been some difficulty about the code numbers as the children are sharp enough to find out their meaning, even though numbers that had no meaning were occasionally thrown in to try to put them off the scent and two or three different numbers were used to signify pediculosis.

By means of this card system and the school nurses the diseases for which the child is at once and rigorously excluded till completely cured were reduced to the following: diphtheria, scarlet fever, measles, varicella, pertussis, mumps, and acute coryza. As an example of the effect of the modifications described, which is due in the main to the work done by the school nurses, the following figures are given. During the previous three months ending on Dec. 3rd, 1903, the exclusions from school amounted to: measles, 18 cases; diphtheria, 140; scarlet fever, 13; pertussis, 61; mumps, 9; trachoma, 12,647; pediculosis, 8994; chickenpox, 172; contagious diseases of the skin, 661; and miscellaneous, 1823; making a total of 24,538 pupils. Now if the new regulations had been in force at that time the number of exclusions would have been: diphtheria, 140 cases; scarlet fever, 13; pertussis, 61; measles, 18; mumps, 9; and chickenpox, 172; or a total of only 400. Consequently the new system would have prevented the interruption during the short period of three months of the studies of 24,138 children. It cannot now be said that the medical inspection of the schools seriously interferes with education.

In New York, as elsewhere, there is no lack of parents who are more anxious to make use of their children than to secure for them a good education. Consequently when it was found that a child excluded from school for some slight complaint would not be readmitted unless under proper medical treatment the parents neglected to obtain such treatment. To meet this difficulty the school authorities had to consult the district attorney and as a result the following notice was issued:—

> Any parent who refuses to put its child under proper medical treatment that it may return to school is violating the compulsory educational law and is guilty of a misdemeanour punishable by a fine.

This was supported by the magistracy, for in a test case the parent was fined $10.

The figures given above have shown the alarming prevalence of diseases of the eye and this fact naturally did not escape the attention of the health authorities. Early in the year 1902 five ophthalmic surgeons were appointed to investigate the matter and after examining a considerable number of children they declared that 17 per cent. were suffering more or less from trachoma. Thereupon the school inspectors were sent to the New York Eye and Ear Dispensary so as to gain fuller experience in detecting this disease. Each inspector was required to spend two hours a day at this dispensary for about a fortnight. But as the cases in the schools were by these means more promptly discovered the number of children excluded increased so rapidly that they soon created an unmanageable crowd at the hospitals and dispensaries. In several cases the medical staff was so overwhelmed that some of the surgeons did not stamp the cards which the children brought. Consequently such children could not be readmitted to school because they had nothing to show to prove that they were under treatment. Of course, complaints arose and ultimately the department of health had to fit up a special eye hospital and dispensary for the school children. At this hospital for trachoma 4337 school children were treated by operation during the year 1903. The number treated without operation was 11,599. Thus there were altogether 15,936 patients. The number of visits for subsequent treatment amounted to 129 830 and the total number of consultations or "treatments" (to use the phraseology of the report) was 145,766. Apart from this 3121 children were examined but it was found that they were not suffering from trachoma. Of course, more trained nurses were required for this hospital and they were obtained from the training school at Blackwell Island. It is a very significant fact that when a proper surveillance rendered it impossible to continue to neglect the children it was found that the hospitals and dispensaries of New York no longer sufficed for the work that had to be done. Consequently the governing authorities of large cities will see from this that probably a great deal more than the mere medical inspection of the pupils is needed if proper care is to be taken of the health of the children.

When an equally effective and thorough system of medical inspection is introduced into the schools of the great towns in the United Kingdom it is probable that in many instances it will also be found necessary that the education and health authorities should create some special hospitals for the children. But this is not all. Bacteriological laboratories will be needed on a much more extensive scale than at present exists in this country. For instance, on Jan. 10th, 1903, the school inspectors of New York were instructed to take swabs from the throats of all the children who on that day showed the slightest redness or a hypertrophied condition of the tonsils. The result was that in that one day 11,451 swab specimens were forwarded to the bacteriological laboratory. They were all examined and in 10,376 cases nothing was detected, 318 showed some doubtful

bacilli, and in 757 cases the Klebs-Löffler bacilli were detected. Have the large boroughs of England the necessary organisation to make a similar experiment?

In regard to vaccination, two inspectors visit the schools so that every child is offered vaccination and any child not successfully vaccinated within five years of school life must be revaccinated. Thus during the year 1903 the number of school children vaccinated amounted to 26,168. Yet it is very rare that primary vaccination is performed at the schools, for the children are not admitted unless they have a vaccination certificate. Thus the school period is the period of revaccination. It is estimated that 90 per cent. of the vaccinations made at school are successful. As for the usefulness of such measures, this was conclusively demonstrated during the severe epidemic of small-pox in 1901 and 1902. Though 10 per cent. of the cases that occurred at New York were among children of the school age—that is to say, from the age of six to 16 years—not one single child attending the public schools contracted the disease.

At the conclusion of his admirable report, the assistant chief medical inspector, Dr. John J. Cronin, says that the medical inspection as at present organised is attaining the end which it has in view but that much remains to be done which appertains to other administrative departments and other social forces or conditions. For instance, the care taken of the children's outer garments leaves much to be desired. In many cases the class-rooms are not properly ventilated, the light is sometimes insufficient, and there is some overcrowding. Personally, while in New York I had only time to visit two of these schools and both were on the East side. One was an old building for which considerable ingenuity had to be displayed to adapt it to educational purposes. Nevertheless, the proper unilateral light had been secured in the class-rooms. The other school was a huge structure only recently built and expressly for school purposes. Here I was much gratified to see that powerful engines were at work, so that revolving fans might provide the entire premises with the air needed. Mechanical ventilation alone is trustworthy and its introduction in this new and model primary school constituted an example which, it is to be hoped, other nations will not delay in following.

The report goes on to recommend the establishment of baths in the public schools, the examination of the eyes and the correction of errors of refraction, and mentions that of 981 children whose eyesight was examined about 30 per cent. suffered in this manner. Then it is urged that the children's teeth should also be examined and properly treated. Greater care should be taken for the correction of any deformity of the locomotive apparatus. All nervous diseases should be excluded from the class-rooms. Hypertrophied tonsils and adenoid vegetations should be removed. But, above all, what is needed is the abolition of the dilapidated and overcrowded tenements where so many children are forced to live under health-destroying conditions. In dealing with this phase the reporter concludes with the following words:—

> I certainly do feel hopeful, however, that while all the good that we would wish for may not be realised in the present generation of school children, for the reason that they, too, are powerless to change their environment, the labour bestowed upon them now will so dissatisfy them with their present condition and surroundings that they will demand and they must have, for no power can gainsay public indignation and dissatisfaction, better homes for the bringing up of their children and the latent pride that is in their breasts will become active and exhibit itself in the better hygienic care of their children. Then as far as bodily cleanliness and disease are concerned there will be no lower classes. Education will have made us all equal and the purpose of medical inspection of schools established by the department of health of the city of New York will have been realised.

These are not the words of a Utopian, a poet, or a public agitator, but of a medical officer written in the fulfilment of his duty as a public official. If we compare the medical inspection of the children attending the New York schools and the very successful feeding of all the children attending the schools in Paris with what prevails at home, it will have to be acknowledged that in Great Britain, and especially in London, there remains still much to be done.

MANCHESTER.

(FROM OUR OWN CORRESPONDENT.)

The Royal Infirmary.

AT the monthly meeting of the board of management of the Manchester Royal Infirmary held recently the question of the speedy completion of the new infirmary and the giving up of the Piccadilly site to the corporation came up for consideration. A scheme had been proposed by two gentlemen for providing a temporary hospital on a site near Stanley-grove, to contain 300 beds, so as to hand over the present infirmary sooner and to obtain an earlier payment from the corporation. A subcommittee had gone over this scheme and came to the conclusion that it would involve a loss of over £20,000 and that it was not advisable to adopt it. There is a natural wish, not to say an impatient desire, both on the part of the corporation and the infirmary board, to have the whole transaction finished as soon as possible. Nowadays we rebel against space and time and endeavour to annihilate both, but a building to accommodate many hundreds must not be run up after the fashion of the jerry builders who build to sell and not to last. One prominent member of the corporation seemed to consider the building operations as dilatory and this was emphasised in a letter from the town clerk to the board, suggesting that the latter did not appear "to give any consideration to the needs of the corporation in respect to the building operations which they had in contemplation." In answer to this a statement was sent showing that the architects were of opinion that the new infirmary would be completed in three and a half years or at the outside in four years from the putting in of the foundations. As regards the use to which the Piccadilly site should be put a new suggestion is now exciting attention. It may be remembered that a favourite scheme was that an art gallery and free library should replace the present building. But it has been growing in the minds of the members of the Manchester Exchange that, notwithstanding the fact that the place in which they congregate is said to be the largest room in Europe, they are fearfully overcrowded, that the ventilation is bad, or rather insufficient, and that the air they breathe is pestiferous, and, moreover, that the site does not allow of its being enlarged. Hence the idea has been broached that a new exchange should be built on the Piccadilly site. A good deal may be said in favour of this scheme. The site is central and commanding and its purchase would relieve the corporation and the ratepayers of a portion of their heavy financial burden. It is to be hoped that mutual forbearance will be shown by the corporation and the infirmary board and that the building of the new infirmary will progress without loss of time.

"Presence of Mind."

Much is heard to-day about degeneracy, both mental and physical, so that it is refreshing to meet with instances of courage and agility, more especially when occurring in those so seriously handicapped as the boys of a deaf and dumb school. Two or three weeks ago a teacher at the Cross Deaf and Dumb School, Preston, awoke about two in the morning and found that the boys' schoolroom on the ground floor was on fire. He roused the inmates and telephoned for the fire-brigade. Some of the smaller boys were very naturally frightened but "there was no panic and the teachers were able to keep them well in hand" till a way of escape was provided. The school engineer got through a window and to the ground by means of sheets tied together and one boy climbed down by a water spout. Ladders were brought and the boys got down one by one. In one of the dormitories there were a number of little fellows who had to climb through windows and along the roof to another room before they could descend. Very plucky little fellows they must be. "Finally, the boys were mustered, counted, and found to be all safe." The fire-brigade got the fire under but considerable damage was done. At 6 A.M. the boys were busy printing postcards to send to their friends informing them that they were safe and would be in school at 9 o'clock. This little narrative tells enough to show that there was coolness in danger of a kind to take hold of the imagination, that discipline must have been good, and that many of the smaller boys showed both courage and activity in getting through windows and along a roof. There could have been no spoken directions, none but those given by fingers or gesture, or by lip-reading; no excited shouting but a silent escape in the dead of night. This speaks well for the school except perhaps as to the arrangements for escape in case of fire. It would seem that they might be improved.

Extension at Oldham Infirmary.

The Victoria commemoration extension of the Oldham Infirmary was opened on March 24th. It provides accommodation for 43 patients and eight servants and contains

operating theatres, x ray and photographic rooms, electric lifts and lighting arrangements, also an out-patient department. It has cost over £20,000, of which about £1500 are still unpaid. In formally handing over the new extension to the chairman of the governors the speaker said that "the new extension had brought up the old part of the infirmary to modern lines."

Consumption and Notification in Cheshire.

Dr. F. Vacher and Mr. T. W. H. Garstang are agreed that so far as Cheshire is concerned voluntary notification of pulmonary tuberculosis has been a failure. The latter gentleman reports that only 50 notifications were received in four years in the Knutsford, Winsford, Middlewich, and Bucklow districts, though there had been 139 deaths from pulmonary tuberculosis and there were probably 200 surviving cases.

March 28th.

LEEDS.

(FROM OUR OWN CORRESPONDENT.)

The General Infirmary.

IN moving the adoption of the annual report and balance-sheet of the infirmary, the treasurer, Mr. Charles Lupton, after referring to the amount of work done during the year 1904, took occasion to discuss at some length certain points in hospital management to which attention had been especially directed since the speech of the Prince of Wales at the annual meeting of King Edward's Hospital Fund. Referring to the excellent work inaugurated by Mr. Danvers Power at the National Hospital for the Paralysed and Epileptic, London, Mr. Lupton was able to assure the subscribers that nearly all the methods which had been recently adopted by that hospital with such a marked lessening of expenditure had been the methods adopted in Leeds for many years. Economy was practised wherever it was thought possible without a loss of efficiency. Mr. Lupton called attention to the fallacies underlying apparently the simplest of figures. A correspondent in the *Times* had published in tabular form some figures bearing on the finance of some of the London and provincial hospitals. In the column headed "cost per bed" the Leeds Infirmary stood at the sum of £73, while another large hospital in a northern city stood at £55. As a matter of fact, the method adopted in different hospitals of estimating the "cost per bed" varied so much as largely to discount the value of such comparisons. An examination of the figures quoted showed that 6139 in-patients and 40,113 out-patients were attended to at the Leeds Infirmary at a cost of £28,514, while in the other hospital 3144 in-patients and 20,441 out-patients were attended to at a cost of £14,939. If for purposes of comparison the figures of the second hospital were doubled throughout it would be seen that the two institutions were on pretty much the same scale as regards expenses in relation to the number of patients treated. There were many circumstances which caused the expenses of different hospitals to vary. Geographically Leeds was highly favoured, for coal and gas were cheap and the water-supply was excellent. The hospital was opened in 1868, and though its age was therefore as nothing compared with the age of many of the London hospitals they were beginning to feel the increasing cost of a building past its first youth. In repairs to the structure, in bringing sanitary appliances up to date, in painting, and in washing the expense during the last three years had been very great. Mr. Lupton referred to the discussion which had lately taken place as to the advisability of making charges to the patients for special articles of diet, such as sugar and tea or butter, and discussed the plan of charging 3*d.* a bottle for medicine which had been strongly advocated by the chairman of the London Hospital. Personally he was quite against this system, feeling sure that it would encourage an impression on the part of the patients that in paying even this small charge they were discharging all obligation to the infirmary; for, he remarked, it was no use informing a patient that the advice was worth two or three guineas and then charging 3*d.* for the bottle of medicine. In Leeds, therefore, when it was decided that a patient was a suitable person to receive hospital aid no charge was ever made but many patients made voluntary gifts and these were always gratefully received.

Smoke Abatement.

Some experiments have lately been carried out by the corporation at the electricity generating works. The principle involved is the use of a mechanical forced draught by means of one of Matthews and Yates's "Cyclone" blowers. The experiments are said to have been very satisfactory. The mention of "smoke abatement" is apt to raise a cynical smile on the countenance of the dweller in Leeds. He has heard of this before and he thinks of his white curtains at home and of the condition of his linen after a few hours' wear. It is to be hoped, however, that the corporation may succeed in lessening the production of smoke in its own departments, for this will strengthen its hands in insisting that others shall make similar efforts.

Proposed Sanatorium for the West Riding.

In spite of some opposition it is believed that the scheme for the provision of a sanatorium for the West Riding will be carried out. Provisionally a site has been secured in the parish of Chapel-le-Dale, at about an equal distance from Ribblehead and Ingleton. In freedom from smoke, in beauty of scenery, in excellence of soil, and in accessibility the site selected leaves little to be desired.

March 28th.

WALES AND WESTERN COUNTIES NOTES.

(FROM OUR OWN CORRESPONDENTS.)

Cardiff Port Sanitary Authority.

THE annual report of the medical officer of health of the Cardiff port sanitary authority (Dr. Edward Walford) records a large amount of useful work carried out during 1904. Every vessel, foreign or coastwise, is boarded by an officer of the authority immediately upon entering the outer basin of the dock. The master or person in charge of the ship is required to fill up a form stating what port he has come from, the number of his crew and passengers, whether there has been any sickness of an infectious nature during the voyage or at the time of arrival among either crew or passengers, and the nature and the result of sickness of any kind. Hitherto this information has been obtained verbally but it is obviously an advantage to have it in writing. The six inspectors, acting under the medical officer of health, inspected 8171 vessels during 1904 and found defects in 1408. In 1903 they found 1228 vessels defective among 8072 inspected. During last year 79 vessels entered the port from places which were either infected or suspected of being infected with plague. The medical officer of health examined 2111 persons on board these ships and the names and addresses of all those who left the ships were taken and forwarded to their destination. No cases of plague or of suspected plague were brought into the port. More than 3000 rats were destroyed either by sulphurous acid gas or after being caught in traps. The Cardiff and county public health laboratory continues to assist the authority in examining samples of drinking water from vessels. In 1903 samples were examined from 66 ships and 46, or 70 per cent., were reported to be impure. In 1904, of the 87 samples examined only 56, or 64 per cent., were said to be impure.

Swansea Port Sanitary Authority.

Mr. Ebenezer Davies, the medical officer of health of the Swansea port sanitary authority, in his annual report states that 1481 defects were found in the 5286 ships inspected at Swansea during 1904. Of the total number of British ships inspected 9·4 per cent. were found with one or more defects which required to be remedied; in the case of foreign vessels this percentage was 30.

Illegitimacy in the Rhondda Valleys.

All those who have studied the housing question in the colliery districts of South Wales have deplored the custom which exists to a very large extent of taking single men as lodgers in the small dwelling houses. One of the worst features of this custom is the amount of illegitimacy which results. In the Rhondda Valleys in 1903 there were 115 illegitimate births, a number which is equal to 13·3 per 1000 of the unmarried and widowed women living in the district between the ages of 15 and 45 years, taking the census figures of 1901 as prevailing in 1903. In the whole of England and Wales during the same year the proportion was 8·4 per 1000. A particularly sad case was investigated at the Cardiff assizes held last week, when a collier was charged under the Criminal Law (Amendment) Act with seducing a young girl who gave birth to a stillborn child on Feb. 4th

last and who was herself only a little over 13 years of age, having been born on Sept. 28th, 1891. The evidence against the man was not sufficient to secure a conviction.

The Health of St. Ives.

Mr. J. M. Nicholls, the medical officer of health of St. Ives, Cornwall, in his annual report for 1904 states that the population was estimated at 6699. There were 147 births registered, giving a rate of 21·94 per 1000, and 65 deaths occurred, corresponding to a rate of 9·70 per 1000, the lowest recorded for many years. Only one case of infectious disease was notified.

March 27th.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

Fatal Accident to a Dublin Medical Student.

AT half past seven in the evening of March 25th Mr. Henry Fawcett, aged 19 years, a medical student, was accidentally killed on the Dublin, Wicklow, and Wexford Railway between Dalkey and Killiney stations. It was stated that he had gone down to the line at a place known as White Rock in order to see the up and down trains which pass one another at full speed at that point. At the inquest Mr. Nolan Wolseley said that he was with Mr. Fawcett when the accident occurred. He noticed that the latter was standing out too much in the railway track and shouted to him to keep back. When the trains had passed Mr. Fawcett was found dead with a broken arm and a fractured skull outside the down rail. The coroner's jury returned a verdict of accidental death and desired to record their sympathy with the bereaved family who are well known in the district. The deceased's father is an officer in the Indian police.

Action against a Medical Man.

An interesting case was recently tried at the Belfast assizes. A lad, 17 years of age, after an attack of mumps, developed arthritis and for this condition the medical man consulted, Mr. C. K. Darnell, recommended rest and the application of a liniment of soap and belladonna. The liniment, according to the medical man's evidence, was to be used in case of pain supervening, a little of it to be sprinkled on lint and laid over the part affected. The boy's parents applied the lint saturated with the liniment continuously, with the result that belladonna poisoning supervened. A great deal of medical evidence was heard in support of Mr. Darnell and the judge put the following question to the jury, "Did the defendant use reasonable care and skill as a professional surgeon in prescribing for, and generally treating, the infant plaintiff?" The jury answered this question in the affirmative and the judge gave judgment for the defendant. The announcement of the verdict was received with applause in court and in the evening bonfires were lighted in Bangor (where Mr. Darnell practises) in honour of his victory. Mr. Darnell (who was defended by the Medical Defence Union) is to be congratulated warmly on the vindication of his professional reputation.

Ulster Medical Society.

At a meeting of this society held in Belfast on March 23rd Dr. T. S. Kirk read a paper on Some Cases of Perforation of the Stomach and Intestines; Mr. A. B. Mitchell, Dr. J. S. Darling, Mr. A. Fullerton, Dr. H. L. McKisack, Dr. John Campbell, and the President (Dr. W. Calwell) took part in the discussion which followed the reading of the paper and Dr. Kirk replied. Dr. Thomas Houston showed a Stomach from a case of Poisoning by Ammonia.

The Royal Victoria Hospital, Belfast.

At the annual meeting of the supporters of this hospital, held on March 27th, it was reported that 2732 new cases had been received into the wards during the year 1904 and these with 176 remaining from the previous year made a total of 2908 intern patients. Of these, 987 were medical and 1745 were surgical. There were 1212 surgical operations with 45 deaths—that is, a mortality of 3·7 per cent. The mortality, excluding the moribund cases, was 4·8 per cent. in the medical wards and 4·2 in the surgical, giving an average mortality of 4·4 per cent. 22,585 new cases were treated in the extern department, of which 3679 were medical and 18,906 were surgical. The total number of new cases treated in the hospital, intern and extern, amounted to 25,317. Financially, the net receipts were during the year £14,792 10*s.* 9*d.* (an increase of £3635 6*s.* 1*d.* over the previous year), while the net expenditure was £13,914 6*s.* 2*d.*, giving a surplus of £878 4*s.* 7*d.*, which after due adjustment of all balances leaves standing in the bank to the credit of the revenue account the sum of £737 2*s.* 8*d.* The expenditure in the hospital during 1904 worked out at a cost of only 27·06*d.* a day per person, including patients, nurses, and staff, and that was an average during the year for the three hospitals—Royal Victoria, Throne, and Consumptive—of £58 16*s.* 8*d.*, less than half of what many of the London hospitals were reported to be costing. (In six of the large London hospitals the support of each person stood at the figure of £120 per annum, which is more than twice that in the Royal Victoria Hospital.) Special reference was made by the various speakers to the good financial position of the hospital, to the opening of another 32 beds, to the great success of the plenum system of heating and ventilation, and to the remarkable results in abdominal surgery, the results of which, it was said, equalled, if they did not surpass, those of any other hospital in the United Kingdom. The Royal Victoria Hospital is now (thanks to the munificence of the Right Hon. W. J. Pirrie and Mrs. Pirrie, who gave out of their own pockets a sum of £11,000) free from debt and there is an endowment fund of £62,614 3*s.* 8*d.* (of which Mrs. Pirrie collected £47,698 6*s.* 5*d.*), which is capitalised and invested.

Sir Francis Cruise, M.D., D.L.

The London correspondent of the *Irish Times* in the issue of March 25th says that advices from Rome state that one of the most interesting Papal audiences of the week was that accorded to Sir Francis Cruise, honorary physician-in-ordinary to His Majesty King Edward VII. in Ireland, who was presented to the Pope by the Rector of the Irish College. Sir Francis Cruise was recently made a Knight of St. Gregory and he made the journey to Rome with Lady Cruise and their daughter to thank His Holiness for the distinction.

March 28th.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Tonic Action of Formates.

THE little known but nevertheless remarkable tonic action of certain formates was described some time ago by Dr. Clément of Lyons at a meeting of the Academy of Medicine. The question has now been re-opened by M. Huchard who at a meeting of the Academy held on March 14th read a paper fully confirming the results at which Dr. Clément had arrived. A formate has been shown to be a marvellous muscular tonic capable of greatly increasing a person's physical energy and acting not only on the striated or voluntary muscles but also on the non-striated muscles of the viscera. Formates would therefore be useful to lovers of sport as well as to many others. M. Huchard recommended them not only in the treatment of all forms of asthenia, general debility, and muscular inaction, but also for convalescents from influenza and for those who have been taking milk diet. Formates in general increased the power of resistance to fatigue and promoted physical energy. They were diuretic, although not to such an extent as theobromine and they diminished the excretion of albumin, a property which enhanced their value in cases of cardiac and renal disease. They were not toxic and did not appear to disagree with the stomach. Three grammes of formate of sodium or potassium might be given daily in a solution containing gum with one or more tablespoonfuls as the dose; a gramme or one and a half grammes of formate of lithium might be given daily in the same way. The treatment was generally continued for ten days, after which there came an interval of ten days; these alternations might go on without inconvenience for several weeks and even for several months.

Bulbo-spinal Spasm in Members of the same Family.

At a meeting of the Society of Neurology held on March 2nd M. Gilbert Ballet and M. Rose showed two patients, brother and sister, suffering from a spasmodic condition from which another sister, now dead, also suffered; in the family history there was evidence of alcoholic excess and nervous disease. The symptoms consisted of contraction of both arms, both legs, and the neck, an aspect of

lacrymose bewilderment, a tendency to spasm of the muscles of expression (*muscles de la mimique*), a slow monotonous nasal voice, and tremulousness on exertion; the sphincters acted efficiently and there was no nystagmus. The condition was intermediate between the pure spastic paraplegia of families and the disease characterised by "*scléroses en plaques*" also occurring in families; the separation of these two types was more or less artificial and all the transitional stages were known to exist.

Lead Poisoning in Painters.

Of late years much attention has with good reason been given to the subject of lead poisoning in painters and the white lead which they use has generally been considered to be the cause of the disease. An investigation is being made by a commission of the Senate and on March 16th Professor Armand Gautier, who is well known to be an authority on such questions, gave evidence. From observations exchanged between Professor Gautier and Dr. Treille it appeared that during the last ten years there have been on an average 200 painters treated every year in the Paris hospitals for all forms of lead poisoning, the symptoms being comparatively mild. During these ten years 13 painters died from lead poisoning in the Paris hospitals. The number of painters who died annually in Paris from lead poisoning both in the hospitals and in private dwellings (*en ville*) might be estimated at about ten, deduction being of course made of all the pathological conditions which if combined with lead poisoning might aggravate it. It must be remembered that there are from 25,000 to 30,000 painters in Paris. Dr. Treille reminded the meeting of statements which had been made to the effect that every year in Paris alone thousands of painters were crippled and hundreds were killed by white lead. He asked whether Professor Gautier knew of statistics justifying these statements. Professor Gautier replied that these statements were based on imaginary figures. The general result of the discussion was that cases of lead poisoning among painters and deaths from this cause were diminishing every year.

Foreign Bodies in the Bladder.

At a meeting of the Surgical Society held on March 16th M. Legueu contributed for M. Barnsby an account of two cases of foreign bodies in the bladders of young girls. In the first of these the patient had for some unexplained reason introduced a small Dumontpallier pessary into her urethra. It became incrusted with calcareous salts and was extracted by a hypogastric incision; recovery was uneventful. In the second case a hairpin had been introduced into the urethra and one of its points had pierced the wall of the bladder and caused phlegmonous inflammation of the cavity of Retzius (the præperitoneal cavity). The remainder of the hairpin served as the core of a large calculus which was in some degree fitted to the bladder (*enchatonné*) and could not be extracted until it was broken up by Liston's forceps. The patient made a rapid recovery.

The Care of Criminal Lunatics.

In a paper read before the Society of Legal Medicine M. Decante gave a historical sketch of the laws and regulations relating to the care of criminal lunatics, together with criticisms of these enactments. He showed the necessity of establishing special asylums for the accommodation: (1) of criminals who were acquitted as being not responsible for their actions; and (2) of those who had become insane during their incarceration. M. Decante also dwelt on the necessity of exercising supervision over these criminals after their liberation and expressed a hope that the Government would support a Bill on the subject which had been submitted to the Chamber.

Essential Oil of Mustard as a Preservative for Anatomical Specimens.

At the meeting of the Biological Society held on March 18th M. Dor gave an account of some experiments which he had made with essential oil of mustard (*essence de moutarde*), a body which, in his opinion, was one of the most powerful antiseptics in existence. It will dissolve in water in the proportion of 40 drops to a litre. Such a solution, although it would irritate a wound, would not irritate the sound skin, and its antiseptic power was equal to that of a solution of mercury perchloride of a strength of 1 in 1000. Used for anatomical specimens it deodorises them if putrefaction has set in and the natural colours are preserved. To make the solution seven parts of common salt per 1000 are dissolved in the water and the mustard oil is then added. By shaking the mixture for 15 minutes a perfectly clear solution is formed. After a time the hæmoglobin dissolves in this solution but keeps its colour perfectly. M. Dor recommended the solution as a preservative for bodies used for dissection, its cost being infinitesimal.

March 27th.

NEW YORK.

(FROM OUR OWN CORRESPONDENT.)

International Sanitary Treaty.

THE United States Senate has ratified and made public a very important international sanitary treaty, adopted by a convention of representatives of practically all nations, held for the purpose of agreeing on uniform safeguards of the public health against the invasion and the propagation of plague and cholera. The treaty includes the regulations to be observed by the powers signatory to the convention as soon as plague or cholera may appear in their territory; the measures of defence by other countries against territories declared to be infected and the special arrangements adopted for countries situated outside Europe; and arrangements for pilgrimages and provisions for the surveillance and execution of the treaty arrangements. The following article in regard to yellow fever is included: "It is recommended to interested countries to modify their sanitary regulations in such a way as to put them in accord with the present position of science upon the method of transmission of yellow fever, and, above all, upon the rôle of mosquitoes as vehicles of the germs of the disease."

The Investigation of Leprosy in Hawaii.

The following measure has passed Congress and become law. When the territorial government of Hawaii shall cede to the United States, in perpetuity, a suitable tract of land on the leper reservation of Molokai the Surgeon-General shall build thereon a hospital station and laboratory for the study of the methods of transmission, cause, and treatment of leprosy. The Surgeon-General is authorised to receive at this station such patients afflicted with leprosy as may be committed to his care, not to exceed 40 in number to be under treatment at any time. The hospital is to be fully equipped with instruments and materials for the thorough study of the disease.

Report on the Origin and Spread of Typhoid Fever in the United States Military Camps in the War with Spain.

The Surgeon-General of the army has issued the report of the special commission appointed to study and to report on the remarkable prevalence of typhoid fever during the Spanish war. This commission was constituted of Professor Victor C. Vaughan of Ann Arbor University, Michigan; Surgeon Walter Reed, United States army; and Dr. Edward O. Shakespeare of Philadelphia. Each member of the commission was especially qualified for his duties and its report has been anticipated with great interest by the profession. By a singular fatality two of the members have died since the investigation began—viz., Surgeon Reed and Dr. Shakespeare—leaving to Professor Vaughan the immense task of compiling the materials accumulated and of preparing the text. The first volume of 710 folio pages contains in minute detail the sanitary histories of the individual companies of 106 volunteer regiments and also data relating to the typhoid and malarial fevers which appeared in several regular and detached organisations. The text is illustrated by numerous diagrams showing the outbreaks of typhoid fever in companies and tents. The appendices include the results of the analyses of drinking water, 700 in number; a report on the chemical disinfection of drinking water; and a paper on typhoid bacilluria. The second volume is devoted to maps and charts. From this voluminous collection of materials we learn that more than 90 per cent. of the volunteer regiments developed typhoid fever within eight weeks after going into camp. It became epidemic in the small camps of not more than one regiment and in the larger ones consisting of one or more corps, and in camps located in the Northern as well as in the Southern States. Infected water was not regarded as an important factor in the spread of typhoid fever in the National encampments in 1898. Flies undoubtedly served as carriers of infection. It is stated that men transported infected material on their persons or in their clothing and thus disseminated the disease. The belief that errors in diet, with consequent gastric and intestinal

catarrh, induce typhoid fever or that simple gastro-intestinal disturbances predispose to it is not supported by these investigations. The percentage of deaths in 20,738 cases in 92 regiments was 7·61. The fact is dwelt on with much emphasis that typhoid organisms are found in the urine of about one-fourth of all cases and that the frequency with which it is voided, its comparative inoffensiveness, its easy dissemination, and the relatively great number of organisms present, render infected urine the most dangerous excretion of the typhoid fever patient. One immediate result of this investigation was the adoption of a system of disposal of excreta in fixed camps by means of a trough containing milk of lime and emptied by an odourless system.

The Panama Canal Mismanagement.

The report of Dr. Charles A. L. Reed, who was sent to the canal zone by the Secretary of War for the purpose of examining the operations of the Commission, shows that the chief sanitary officer, Colonel Gorgas, is so hampered in his work by the Commission as to imperil seriously the success of the enterprise. The medical profession was desirous of having Colonel Gorgas a member of the Commission in order that he might have a controlling influence upon the sanitary branch of the service. The President, however, advised that there be "one head of the medical department" and he was appointed to that position in the belief that he would have more time to devote to these duties. The result has been that in his subordinate position he has been constantly under the narrow policy adopted by the Commission and has been unable to fulfil his mission. The medical staff can carry on no work not sanctioned by the Commission and to obtain its approval requires a delay that prevents the effective use of measures. To this delay is attributed the appearance of yellow fever at Panama. Dr. Reed mentions many instances of the failure of the medical department to accomplish the reforms that it projected and concludes that very much has been done in the way of sanitation in exceedingly unfavourable circumstances; that much remains to be done which cannot be effected unless better facilities are afforded; and that very much more ought to be done and would have been done if the facilities had been properly furnished.

March 13th.

NOTES FROM INDIA.

(FROM OUR SPECIAL CORRESPONDENT.)

Instances of Municipal Misgovernment: Proposal for Provincial Sanitary Reform.

FROM time to time I have to record the incapacity and the apathy of municipal bodies and the intervention of the Government to obtain better administration. The last defaulter is the Kumbakonam municipality in the Madras Presidency. This town is, for its population, one of the richest in the province and also one of the most important. Amongst other serious defects, neglect of sanitation, vaccination, and vital statistics figure prominently. Instead of dealing thoroughly with such a recalcitrant body—it has already had cautions—the Government merely threatens it with a paid chairman in place of an elected one. Here, surely, is a direction in which the sanitary improvement of the mofussil towns of India might be more under direct supervision and control—viz., by appointing an officer of the Indian Medical Service as chairman who could insist that such powers as were possessed by local bodies should be utilised and that the sanitary administration of the towns should be kept up to a reasonable standard. Where one municipality is disfranchised or admonished there are dozens in which all administration, and especially sanitary control, is neglected. Unless there is someone at the head of these provincial town councils to keep them up to the mark they are in danger of drifting on in an apathetic way until their administration becomes a scandal and sanitary neglect often goes on for years until some financial irregularity brings the municipality to serious notice. As a measure of sanitary reform for India the appointment of such an officer as chairman (and perhaps one officer might act for two, or even three, towns) would be a step of great value and might be made the basis of the special sanitary service for India.

The Nursing Services in the Bombay Presidency.

A scheme has been proposed for the amalgamation of the nursing services of the Bombay Presidency by forming a Western India Training Association under the control of the local government, the nurses to be trained at one and the same school and the candidates to sit at one and the same examination. The nurses would be sent from one hospital to another. The scheme does not find favour with the nurses themselves but the present system is unsatisfactory because the nurses work under different associations, each of which has its own nursing staff. The whole question is under the consideration of a special committee.

The Plague Epidemic.

The latest plague returns show again a rise after the moderate set-back of the past fortnight. For the week ending Feb. 25th 29,465 deaths were recorded throughout India, as against 27,837 for the previous seven days. The outbreak at Aden is serious. A few isolated cases occurred last November but in December 207 cases with 162 deaths were reported. In January 423 cases and 326 deaths occurred and in February the mortality has been at the rate of about 250 deaths per week, but the returns for the last week show that some improvement has begun. Considering the small population the death-rate is very high. The United Provinces return 12,213 deaths, as against 10,869 for the previous week; the Punjab, 6940, as against 6976; Bengal, 4914, against 4761; Bombay districts, 2400, against 2514; Hyderabad, 602, against 319; Rajputana, 459, against 553; Central Provinces, 403, against, 424; Mysore State, 274, against 295; Madras districts, 258, against 261; Bombay city, 735, against 618; and Calcutta, 130, against 88. It is a very curious fact that the figures for Rangoon and Poona and Karachi are not included in the usual list. The disease is rapidly increasing in Calcutta and Bombay city; in the latter the death-rate is over 115 per 1000 per annum.

The Special Plague Department of Calcutta.

There is a proposal to abolish this department, chiefly on the score of expense. I hear, however, that it has been for the past two years very economically worked and that in addition to plague operations a considerable amount of other sanitary work has been given to it. It is argued that because Bombay reduced its expenditure by handing over the administration of plague to its health department Calcutta might be able to do the same. The two cases are not parallel. Calcutta has never spent much on plague while at Bombay the expenditure has been enormous. Moreover, in Calcutta the plague department has been instrumental in effecting many very valuable sanitary reforms in regard to which no attempt had been made by the health department. It is very questionable, therefore, whether the proposal will be carried through.

It is understood that Major Cleveland, I.M.S., who was deputed from Poona as medical attendant to the Amir in October last, has been obliged to arrange to return to India owing to private affairs.

March 10th.

NEW ZEALAND.

(FROM OUR OWN CORRESPONDENT.)

Charge of Manslaughter against a Medical Man.

THE grand jury brought in a "no bill" in the case of Dr. Collins who had been committed on a charge of manslaughter because of his treatment of a case in the Auckland Hospital. Judge Edwards, in his charge, seemed to indicate that had he been the magistrate of the lower court he would not have committed the medical man. This case has undoubtedly occupied the attention of the public and the profession throughout New Zealand in a manner rarely seen. For some time past the relations between Dr. Collins (late medical superintendent of the Auckland Hospital) and the profession in that city have been of a very strained nature. The result was that practically all the best surgeons left the honorary staff and the vacancies were filled by men some of whom had had but a limited surgical experience. In consequence of certain allegations the Government directed that Dr. D. Macgregor, the inspector-general of hospitals, should hold an inquiry but before his report was made public a Royal Commission was appointed to inquire into the alleged mismanagement and as a result of the commissioners' report an action for manslaughter was brought against Dr. Collins. From the evidence, which is set out verbatim in the last number of the *New Zealand Medical Journal*, it would appear that a steward of one of the coasting boats was taken

to the Auckland Hospital. He complained of pain over the left lower part of the abdomen. Dr. Collins diagnosed appendicitis and opened over that organ, only to find that it was quite normal. Dr. Neill, one of the honorary staff, swore that he urged Dr. Collins to make a median incision because in his opinion it could not be appendicitis. A median incision was made and the bowel was examined but no rupture was found. Two pieces of fæcal matter were found and, according to the evidence, Dr. Collins made two incisions in the bowel and removed these fæcal masses, which were of "about the size of a walnut." The whole charge of "accelerating the death of the patient" was based upon these incisions. The operation was then proceeded with and two ulcers in the upper part of the stomach were said to have been discovered and stitched up. Further examination revealed a ruptured duodenal ulcer which was stitched up. The operation occupied about one and a half hours. The patient died soon after his removal from the table. At the departmental inquiry held by Dr. Macgregor four of the honorary staff swore that they saw the ulcers in the stomach. An order for exhumation was issued by the Colonial Secretary, when it was found that as a matter of fact the stomach was quite healthy and that the only lesion other than those made by the surgeon was the ruptured ulcer in the duodenum. It is a matter for great regret that the whole thing had not been thrashed out in the Medical Association, although at the same time it is quite evident that some power should be given to the inspector-general to step in and to check indiscriminate and unskilful operative work if such obtains in any hospital. Doubtless it might be awkward if all surgeons had to stand the same searchlight examination which Dr. Collins underwent and although the profession generally has suffered discredit there can be no doubt that the inquiry and the trial have made for the better management of our hospitals.

Sanatorium for Consumption.

His Excellency the Governor, accompanied by Lady Plunket, the Hon. Sir J. G. Ward (Minister of Public Health), and Dr. J. M. Mason, chief health officer of the colony, recently inspected the Te Waihato Sanatorium for the Treatment of Consumption. The institution is capable of accommodating 65 patients and is really one of the best of its kind south of the line. It is situated on a range of hills in one of the most salubrious parts of the North Island. There are 1000 acres of land much of which is covered with native bush. The shelters are most artistic and of the latest pattern. The whole place is lighted by the electric light. Already some very good results have been obtained. It is managed entirely by the Government and there is a limited accommodation for paying patients.

Patent Medicines.

The new regulations issued by the health department, requiring that all "patent medicines" must have the formulæ set out on the label, have caused quite a commotion amongst those who live on the credulity of the public. In deference to the pressure brought to bear by the newspapers and quacks generally the regulations have been modified. It is now required that the formulæ should be deposited with the Minister of Public Health and that all mixtures containing poison must have the words "this contains poison" set out in gothic type on the label. There is no doubt that this is a very decided step in the right direction.

Private Hospitals.

The recent regulations requiring all private hospitals to be licensed by the health department have already eliminated many of the unsuitable buildings. Another year or so and New Zealand may fairly claim that the *rich* as well as the *poor* will have equal chances of recovery.

Feb. 10th.

PRESENTATION TO A MEDICAL MAN.—At a meeting held at the Church Missionary Society Hall, Bristol, on March 23rd, under the presidency of Colonel H. B. Savile, C.B., Dr. J. H. Loch was presented with a roll-top desk, a chair, a typewriter, and an illuminated album containing the names of 300 subscribers. The album bore the inscription, "Presented to Deputy-Surgeon-General J. H. Loch, M.D. (Indian Medical Service, retired) in grateful recognition of his earnest and self-denying labours for the past 12 years as honorary lay secretary of the Bristol Church Missionary Association."

Obituary.

MAURICE GRIFFITH EVANS, M.D. ABERD., L.R.C.P. LOND., M.R.C.S. ENG., L.S.A.

Dr. Maurice Evans of The Mount, Caerphilly, Glamorganshire, who died recently in his seventy-third year, was the son of a former vicar of Llangolman, Pembrokeshire. After serving an apprenticeship to his uncle the late Dr. Phillips of Newcastle-Emlyn he became a student at Guy's Hospital and took the diplomas of M.R.C.S. Eng. and L.S.A. in 1853. In 1859 he graduated as M.D. at King's College, Aberdeen, and was admitted a Licentiate of the Royal College of Physicians of London in 1872. Some 45 years ago he commenced to practise at Narberth in Pembrokeshire where he took a leading part in all public and philanthropic movements and especially interested himself in the work of the Royal Society for the Prevention of Cruelty to Animals. While at Narberth he contributed two articles to THE LANCET; one in 1859 on cases of retention of urine due to retroversion of the uterus and one in 1869 on nicotine poisoning. About 30 years ago he removed from Narberth to Cardiff where he had an extensive practice. In 1881 and 1882 he was president of the Cardiff Medical Society. About ten years ago he retired from professional work and went to live at Caerphilly. He was a life-long abstainer and took much interest in Church work, being a lay elector for the Llandaff Diocesan Conference. At the funeral, which took place on March 20th, there was a large attendance, including many ministers of religion of various denominations, medical men, magistrates, and others. The procession was headed by the officials and members of the Eisteddfod committee and each wore a white bow in respect of the useful and long association of the deceased with the annual festival. The service, which was fully choral, was conducted by the Rev. Connop L. Price, rector of Caerphilly, the Rev. J. Williams, vicar of Trallong, and the Rev. M. L. Evans of Aldershot. At the graveside a very impressive Welsh service was conducted by the Rev. D. Griffiths of Brynmawr and the rector of Caerphilly, and preceding the benediction the well-known hymn, "O Fryniau Caersalem," &c., was sung by the assembly to the tune of "Crugybar."

AUGUSTUS DAVID MARTIN TALBOTT, M.R.C.S. ENG., L.S.A.

Mr. A. D. M. Talbott died suddenly at his residence, 14, Richmond Hill, Clifton, Bristol, on March 23rd, in his seventy-fourth year. The deceased, who received his medical education at St. George's Hospital, became qualified as M.R.C.S. Eng., L.S.A., in 1852 and 1853 respectively. Mr. Talbott had been for many years in practice at Clifton and continued his professional work until within a few days of his death. He had been for 40 years the honorary local secretary of the Royal Humane Society and took the greatest interest in the work of the society; he had also been very energetic in introducing the teaching of swimming in the Bristol elementary schools. Mr. Talbott will be much missed and sincerely regretted in Clifton and Bristol. He leaves a widow but no children.

Medical News.

VICTORIA UNIVERSITY OF MANCHESTER.—At examinations held in the Faculty of Medicine in March the following candidates were successful:—

FINAL EXAMINATION.

Part I.—Charles Brown, T. G. Burnett, P. J. Harris-Jones, A. W. Howlett, Roland Nightingale, H. B. Pare, and P. L. Pollard.

Part II.—F. L. Boag, Archibald Cambell, Catharine L. Corbett, J. B. Dalton, *G. D. Dawson, R. L. Ferguson, H. E. Fox, W. H. Hey, R. W. Higson, Ernest Hulme, T. W. Lonsdale, G. G. Parkin, James Smalley, Henry Thorp, David Walker, *Eric M. Wilkins, and J. S. Young.

* With honours.

SECOND EXAMINATION.

A. Anatomy and Physiology.—J. W. Bride, G. W. Bury, Harold Coppock, D. J. Dakeyne, J. A. Fairer, Frederick Hall, Frank Hartley, Robert Lakin, Peter Moran, Wilfrid Nightingale, Alice Oberdorfer, George Rainford, Robert Robertson, Douglas Rodger, Elsie M. Royle, Vincent Southwell, H. E. R. Stephens, J. V.

Steward, T. W. Todd, F. D. Walker, G. B. Warburton, and Henry Whitehead.

B. Materia Medica and Pharmacy.—T. E. Dickinson, W. P. Moffet, and Samuel Rawlinson.

WE have been asked to remind our readers that the dinner to be given on Wednesday, April 5th, to Mr. W. Johnson Smith by the medical staff of the Seamen's Hospital Society will take place at the Trocadéro Restaurant at 7.30 P.M. Dinner tickets can be obtained at the offices of the Seamen's Hospital Society, 13A, Cockspur-street, London, S.W.

RUSSIA INVITES FOREIGN MEDICAL AID.—According to the *Novoe Vremya*, the large number of medical men called up for military service has made numerous vacancies in public institutions, &c., which it has been found impossible to fill up from amongst Russian citizens and the Medical Council has had to consider the question of admitting medical practitioners with foreign diplomas to practise in Russia. The decision is in favour of the measure, the chief reason for which is the need for dealing with a possible invasion of cholera. Foreign medical men desiring to practise in Russia should be well acquainted with the Russian language and should be able to show that they have already served in some medical establishment for at least two years.

NATIONAL ASSOCIATION FOR THE PREVENTION OF CONSUMPTION.—The sixth annual general meeting of the National Association for the Prevention of Consumption was held on March 23rd, at 20, Hanover-square, London, W. The chairman, Lord Derby, in moving the adoption of the report, said that he hoped that the association and its work would be brought prominently before the City at a meeting to be held at the Mansion House on May 17th. Provision should be made, he thought, for advanced cases of pulmonary tuberculosis and for cases beyond recovery. Dr. Nathan Raw, who seconded the motion, said that treatment of advanced cases in sanatoriums had caused scepticism as to the utility of these institutions in the minds of some people but it should be remembered that the sanatorium could only be expected to confer benefits on those patients in the early stages of the disease who were also otherwise suitable cases for treatment. Dr. L. A. Weatherly supported the motion which was carried. Sir William Broadbent proposed—

That in the interest of the public health it is necessary that consumption and tuberculous disease generally in the metropolis should be dealt with in a comprehensive manner and that this will be done most efficiently by the Metropolitan Asylums Board constituting itself the sanatorium authority for consumption in London.

Dr. C. Theodore Williams seconded the motion which was adopted. On the motion of Mr. Malcolm Morris, seconded by Dr. H. Mackenzie, the auditors and the honorary secretary (Dr. J. J. Perkins) were re-elected and the meeting closed with the usual courtesies to the chairman.

CENTRAL MIDWIVES BOARD.—The members of the Central Midwives Board met on March 23rd at 6, Suffolk-street, Pall Mall, S.W., Dr. F. H. Champneys being in the chair. The re-election of Dr. Champneys as the representative of the Royal College of Physicians of London, of Dr. J. Ward Cousins as the representative of the Royal College of Surgeons of England, and of Mr. E. Parker Young as the representative of the Society of Apothecaries was notified. It was announced that Dr. W. R. Dakin had been elected as the representative of the Incorporated Midwives Institute. The Board was informed by the clerk of the county council of the West Riding of a resolution of the county council suggesting the reduction of the certificate fee to 2*s.* 6*d.* or some less sum. This was discussed and it was agreed that no action should be taken in the matter. The Board then considered a letter from Dr. J. McLiesh asking the Board to reconsider its decision not to recognise the certificate of the Belfast Union Maternity Hospital as an approved qualification under Section 2 of the Midwives Act. The Board decided that no action should be taken in the matter. A letter was read from the President of the Liverpool Ladies Charity and Lying-in Hospital asking the Board to constitute Liverpool an examination centre and a letter was also read from Dr. H. Briggs, professor of midwifery in the University of Liverpool, forwarding a memorial to the same effect signed by certain medical officers of health and other members of the medical profession in Liverpool and the adjoining districts. This request was not acceded to by the Board. The Board then considered a letter from Mr. E. Sergeant, medical officer of health of Lancashire. By the rules of the Board "a midwife must decline to attend alone and must advise that a registered medical practitioner be sent for ..... in the case of lying-in women ..... upon the occurrence of" a "rise of temperature above 100·4° F. with quickening of the pulse for more than 24 hours," and it appeared, according to the inspectors of Mr. Sergeant, that some midwives were ignorant of the use of the clinical thermometer. The opinion of the Board was that the women should be instructed and their attention called to the rules. It was announced that the total number of midwives on the roll amounted to 18,231. The Board adjourned to April 27th.

DONATIONS AND BEQUESTS.—Under the will of Mr. Richard Cadbury the following hospitals will receive legacies—viz., the Temperance Hospital, London, £10,000; Birmingham General Hospital, £5000; Birmingham Eye Hospital, £5000; Birmingham Ear and Throat Hospital, £2500; and Birmingham Orthopædic Hospital, £2500.—Mr. Alexander Fry has by his will left £500 to Charing Cross Hospital and £500 to the Royal Hospital for Incurables.—By the will of the Rev. Thomas Hulme the sum of nearly £16,000 will be divided between the Sheffield Royal Hospital and the Sheffield Royal Infirmary.—The Royal Halifax Infirmary will benefit by the sum of £1000 under the will of Mr. Edward Crossley.—Under the will of Miss C. Squire, Gloucester-terrace, Hyde Park, the Westminster General Dispensary receives a legacy of £200 free of duty.

UNIVERSITY OF LONDON.—A meeting of the Faculty of Medicine was held at the University, South Kensington, on March 24th. Dr. J. K. Fowler, the Dean, occupied the chair and there were 63 members present. Dr. Lauriston E. Shaw was elected to represent the faculty on the Senate for four years from May next in place of Sir E. Cooper Perry, whose period of office will come to an end on that date. A vote of thanks was given to Sir Cooper Perry for his services as Senator during the past four years. The Dean announced that Mr. Alfred Beit had promised to increase his donation towards the fund for building and endowing a University Institute of Medical Sciences from £5000 to £25,000. A vote of thanks to Mr. Beit was carried by acclamation. The faculty approved of a proposal that on the occasion of the return visit of British physicians and surgeons to Paris in May next, the Dean of the Faculty of Medicine should take some special steps to do honour to the memory of Pasteur. It was resolved that in the opinion of the faculty it was advisable that pass lists of Bachelors' degrees should be issued in alphabetical order and without classification. It was resolved that it was desirable that members of boards of studies associated with the Faculty of Medicine should retire in accordance with some definite plan and a committee was appointed to prepare a plan and to submit it for the approval of the faculty.—The council of King's College has elected Dr. Peter Thompson as Professor of Anatomy and Professor Arthur Dendy, D.Sc., of the South African College, Cape Town, as Professor of Zoology.

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC.—The annual general meeting of the members of the Medical Graduates' College and Polyclinic was held at the College, 22, Chenies-street, London, W.C., on March 25th, Dr. Theodore Williams being in the chair. In proposing the adoption of the annual report of the council the chairman said that it showed that the Polyclinic was progressing, on the whole, very favourably. The institution was increasing its sphere of usefulness and the number of members was greater than before. The attendance at the lectures, demonstrations, and practical classes had not in any way lessened. He drew the attention of the members of the profession to the fact that the examination of specimens of sputum and analyses of different kinds were undertaken at the laboratory of the Polyclinic. Some of the very best teachers in the medical profession lectured at the Polyclinic and the council and the members of the institution were much obliged to them. He congratulated the members on the fact that the balance-sheet showed that the Polyclinic had been able to pay its way and to save a little money. Mr. James Berry, in seconding the adoption of the report, said that that was the first year since the College had been founded in which the expenditure and the income had balanced. As treasurer he had to admit that the financial condition was satisfactory but still he wanted more money. He praised

the medical superintendent, Captain A. E. H. Pinch, for the successful financial result. The motion for the adoption of the report was carried unanimously.

Mr. Edward Roberts of Oakfield, Hale, one of the honorary surgeons to the Manchester Royal Eye Hospital, has been appointed High Sheriff for the ensuing year for his native county of Cardigan.

A LECTURE entitled, "The Bible in the Light of Modern Science," will be delivered by Mr. William Woods Smyth, at the Stafford Rooms, Edgware-road, London, W., on Friday next, April 7th. The chair will be taken by Sir William Broadbent at 5 o'clock.

THE GARCIA CENTENARY.—The *Musical Times* for April contains a very full and most interesting account of the Garcia Centenary, with illustrations. There are a portrait of Manuel Vicente Garcia, the father of Manuel Garcia, the illustrious maestro whose 100th birthday occurred so recently, a reproduction of the well-known portrait by Chalon of Maria Garcia (Madame Malibran), a reproduction of a daguerreotype taken in 1848 of Jenny Lind, Garcia's most famous pupil, a reproduction of a sketch by Doyle of Hallé and Garcia playing chess, Manuel Garcia as he was 50 years back at the time of the invention of the laryngoscope, and lastly, a special reproduction on plate paper of the recently painted portrait by Sargent. A short account of Garcia's career is given as also a full description of the centenary celebrations. Among the other articles we are glad to see one calling attention to the beauties of Bach's choral preludes. Why is it that these wonderful compositions are so seldom played?

THE STANDARDISATION OF DRUGS.—Messrs. Evans, Gadd, and Co., of Exeter, in the most recent edition of their price list for medical men, have included a short introductory essay on the Standardisation of Drugs, explaining their methods. When the chief active ingredient of a drug is known and can be readily isolated an estimation of it gives approximately the value of the drug, but in the case of some of the most important drugs the cause of their undoubted activity cannot be traced to any definite constituent and the drug can only be standardised by physiological tests. For example, ergot is tested as to its ecbolic efficiency by experiments on pregnant guinea-pigs and the cardiac tonics, digitalis, strophanthus, and squill, can only be effectively tested by their action on the living heart of the frog, and Messrs. Evans, Gadd, and Co. state that the preparations which they offer have been so tried.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

The Pharmacy Bill.

FOUR Members—Mr. BATTY LANGLEY, Mr. ALEXANDER CROSS, Mr. JAMES BAILEY, and Sir MARK STEWART—have given notice to move the rejection of the Pharmacy Bill when it comes on for second reading.

HOUSE OF COMMONS.

WEDNESDAY, MARCH 22ND.

The Home Office and the Vaccination Act.

Mr. WEIR asked the Secretary of State for the Home Department whether in view of the fact that magistrates throughout the country place different constructions on the term conscientious objection, as defined in the Vaccination Act, 1898, cases having recently occurred in which a man who had been granted a certificate of exemption for one child had been refused a certificate for another, although he had in each instance raised precisely the same conscientious objection to vaccination, he would state when he proposed to lay upon the table of the house the circular issued by the Home Office calling attention to the remarks made by the Lord Chief Justice relative to the principle on which the Act ought to be administered; and whether he would consider the expediency of so amending the Act as to remove the difficulty experienced by magistrates.—Mr. AKERS-DOUGLAS replied: If the honourable Member will move for this circular in the form of a return I shall be happy to grant it. The question of legislation on the subject is one for the President of the Local Government Board.

The Prime Minister and the Conscientious Objector.

Mr. WEIR asked the First Lord of the Treasury whether he was aware that candidates for the public service were not allowed to take up appointments unless they had been vaccinated; and whether, seeing that this regulation penalised candidates who had a conscientious objection to vaccination, he would so amend the regulations as to make it competent for such persons to secure their appointments under a certificate of exemption granted under the conscience clause of the Vaccination Act, 1898.—Mr. BALFOUR said: I think the honourable Member must be under some misapprehension. I never heard that any objection felt by candidates to being vaccinated themselves would constitute conscientious objection. The conscientious objection is to the vaccination of their children.

The Physical Condition of School Children.

When the Vote on Account was before the House Dr. MACNAMARA initiated a short discussion on the physical condition of school children. He said that nothing more cynical had ever come under his notice than the disregard shown by the Board of Education for this vitally important question, particularly in the matter of food. There was abundant evidence, including the testimony of Dr. Eichholz, as to the lamentable lack of proper food among the school children in the poorer districts and they could not let this sort of thing go on. He himself had seen the miserable condition of many of the puny scraps of humanity upon whose weak shoulders the burden of the empire would ultimately rest.—Sir JOHN GORST expressed the opinion that the time for inquiry had passed and the time for action arrived and it was most discreditable to their powers of administration and legislation that such a matter had not been dealt with.—Mr. LONG said that the view of the Local Government Board was that there was a great deal in the report of the committee on the subject that could not be acted upon without legislation and that much of the rest would require very careful consideration. The Local Government Board could not admit that it had neglected its duty in any particular.—Sir JOHN GORST said it had been suggested that the Local Government Board should make regulations as to the supply of milk.—Mr. LONG replied that one of the last things he did at the Board was to obtain the sanction of the Treasury to an additional staff for carrying out the work in connexion with the Adulteration of Food Acts so as to keep the local authorities up to the mark. During the last few years there had been a remarkable improvement in the action of the local authorities in this direction.—Sir WILLIAM ANSON, who also spoke, pointed out that the Board of Education was powerless to provide for the feeding of children in the elementary schools. When the Board was charged with being slack in carrying out the recommendations of this committee he must remind the House that the report was issued only last July and that throughout the autumn he had been inquiring of persons with a practical acquaintance with the life of the poor as to how this question—which became the more difficult the nearer it was approached—could be dealt with. To take away from the parents the duty of supplying meals for their children and to break up family life by inducing the children to have their meals regularly at school must have disastrous results. What it was necessary to get at was the extent of the evil and the proper remedy. It would not be fair to attack the department for negligence in a matter of such pathetic importance when the essential facts were not known and when a false step must have such serious consequences.

THURSDAY, MARCH 23RD.

Vaccination Prosecution.

Mr. PHILIP STANHOPE asked the Home Secretary whether his attention had been called to the case of Jabez Wilson Harrison of Burgh le Marsh, Lincolnshire, who had already suffered two months' imprisonment imposed upon him by the magistrates of Spilsby and Boston and who was now undergoing a third term of imprisonment of a month inflicted upon him by the latter bench of magistrates in consequence of his conscientious objection to compulsory vaccination and the refusal of the magistrates to grant him a certificate of exemption; and whether he would order the release of this man and call the attention of the magisterial benches of Spilsby and Boston to the spirit and intention of the Vaccination Acts with regard to conscientious objectors.—Mr. AKERS-DOUGLAS said: I can only refer the honourable Member to the answer which I gave to the honourable member for Ross and Cromarty on this case. This was as follows: "I have made inquiries into this case and I learn that the remarks on the subject of conscientious objection to vaccination made by the Lord Chief Justice at the Birmingham summer assizes were brought to the notice of the Spilsby magistrates before they convicted Harrison. The question whether the circumstances justify the issue of a certificate of exemption is in each case one for the discretion of the magistrates, with which I have no power to interfere." I regret that I do not feel justified in advising any remission of the sentence.

The Viewing of Bodies at Inquests.

Mr. KEIR HARDIE asked the Home Secretary whether his attention had been called to the remarks of Mr. Coroner Graham, of Consett, anent the advisability of discontinuing the practice of compelling juries to view dead bodies upon which inquests were being held; and whether he purposed to take any action for putting an end to this practice.—Mr. AKERS-DOUGLAS said: My attention had not been called to the remarks in question but I have read a newspaper report of them which the honourable Member was good enough to send me. Legislation would be necessary to enable the practice to be discontinued; and on this point I can only refer the honourable Member to the answers given by my predecessor on Feb. 22nd and March 29th, 1900, to the effect that there was no such decided preponderance of expert opinion in favour of any definite change in the law as would afford a reason for proposing legislation of the kind suggested.

The Physical Condition of School Children.

Dr. MACNAMARA asked the Secretary to the Board of Education whether on the occasion of his visit to the Johanna-street Council School, North Lambeth, he found any children unfit to take advantage of the instruction offered in the school as a result of being hungry and ill-fed; and, if so, what immediate steps he proposed to take in connexion with the condition of such children, if any.—Sir WILLIAM ANSON replied: I cannot say that on the occasion of my visit any children were unfit to receive instruction owing to hunger, though I formed an opinion that owing to long-continued unhealthy conditions of life some of the children were backward in development and needed a simpler and in some respects a different course of instruction. I have every hope that the report of the committee now sitting will enable us to decide whether these cases can be dealt with by the action of the department concurrently with organised voluntary effort.

Dr. MACNAMARA asked whether the honourable gentleman's attention had been called to the statement of Miss Deverell, sub-inspector under the Board of Education, in evidence before the Committee on Physical Deterioration to the effect that she knew one school where the master stated that the children got most of their meals by meeting workmen's

trains and begging scraps from the men; and, if so, what immediate steps he proposed to suggest in order that the needs of these children might be so attended to that they might be in a position to profit by the instruction offered to them.—Sir WILLIAM ANSON answered: I have read the evidence to which the honourable Member refers but I think he will agree with me that in so serious a matter statements made to a schoolmaster, repeated by him to a lady, who communicated them to the Committee on Physical Deterioration would hardly furnish an adequate ground for departmental action. I may add that I have myself been informed by teachers of the practice referred to and my informants have added that it by no means follows that the children thus supplied cannot be fed at home.—Dr. MACNAMARA: Having regard to the fact that this lady is an official of the department, may I ask whether the honourable gentleman has any doubt as to the truth of her statements?—Sir WILLIAM ANSON replied: No, sir, none whatever.

Dr. MACNAMARA further asked whether the honourable gentleman's attention had been called to paragraph 360 of the report of the Committee on Physical Deterioration endorsing a recommendation of the Royal Commission (1903) on Physical Training in Scotland to the effect that cases arose in which it was desirable that the preparation and cooking of meals for underfed school children ought to be regarded as one of the charges incident to school management; and whether he was in a position to assist the putting of this recommendation into practical effect.—Sir WILLIAM ANSON said: My inquiries on this subject have led me to believe that the wisdom of preparing and cooking meals on the school premises as a mode of dealing with those cases in which children need to be provided with food elsewhere than at home is seriously open to question.

MONDAY, MARCH 27TH.

The Physical Condition of School Children.

Sir JOHN GORST asked the Secretary to the Board of Education whether the evidence on medical inspection of schools and feeding starving school children taken by the Royal Commission on Physical Training in Scotland and by the Departmental Committee on Physical Deterioration would be laid before the new committee of the Board of Education; whether fresh evidence would be taken by it and of what nature; whether the further consideration of the report of the Committee on Physical Deterioration would be suspended until the new committee reports; and whether its report would be made before the end of the session.—Sir WILLIAM ANSON replied: The evidence taken before the Royal Commission on Physical Training and the Departmental Committee on Physical Deterioration will be laid before the new committee referred to. The terms of reference sufficiently indicate the character of the fresh evidence which that committee is intended to take and the consideration of the report of the Committee on Physical Deterioration will only be suspended in respect of the matters included under that reference. I cannot say whether a report will be made before the end of the session.

Sir JOHN GORST also asked the Secretary to the Board of Education whether the Board of Education would address a circular to local education authorities advising them to instruct the managers and teachers of public elementary schools to refer the case of children attending their schools, hungry and destitute and unable from affliction to profit by the instruction provided, to the proper Poor-law authorities for relief.—Sir WILLIAM ANSON said: Such a circular as is proposed could not properly be issued by the Board of Education without the concurrence of the Local Government Board. I will consider the matter.

Sir JOHN GORST asked the President of the Local Government Board whether he would address a circular to the local Poor-law authorities pointing out the duties of relieving officers in reference to giving medical and other relief to destitute children irrespective of the conduct and character of their parents, and whether the Local Government Board would suggest that in case of relief in kind given to destitute children part of such relief should be in the form of milk.—Mr. GERALD BALFOUR said: My reply to the question of my right honourable friend must be to the same effect as that which I gave on the 17th inst. to a somewhat similar question put to me by the honourable Member for the Ilkeston Division. I am not aware of any reason for supposing that boards of guardians and their officers are not alive to the powers and duties which attach to them in relation to destitute children, where application is made to them for relief. With regard to the latter part of the question I think that boards of guardians may be trusted to use their discretion as to the giving of milk as outdoor relief to destitute children. The Local Government Board called the attention of its inspectors to the subject last year. It does not appear to me to be necessary to issue a circular as suggested.

Later in the day a discussion arose on the same subject, an opportunity being afforded on the second reading of the Consolidated Fund Bill.

Dr. MACNAMARA said that the real practical education difficulty was not the religious question but how they were to deal adequately with the needs of the physically unfit. He confessed he would rather have a well set-up, well-clothed, well-fed sturdy little Churchman than a rickety, weak-kneed, weak-chested little Nonconformist—or *vice versâ*. Two things must be done. First in the very poor slum schools the children must be kept under permanent medical supervision. There were at present in London three or four medical officers whose services were utilised, but if the needs of London were looked after like those of Brussels there would be about 100 medical officers so employed. Secondly, the canteen scholar system of Paris must be adopted. It was a perfectly simple system partly maintained by voluntary subscriptions, partly by payments made by the parents, and partly by a grant made by the State. Under such a system in slum areas schools would be linked together, four or five in each group, and for each group there would be a central dining hall. The parents would obtain dinner coupons; if they could pay they would do so; if not they would get them gratuitously.

Sir JOHN GORST said that the number of children sacrificed to the Moloch of industry owing to the unfavourable conditions before and after birth induced by the mothers working in factories was enormous. In Lambeth the other day about two dozen cases of starving children whose condition was vouched for by a medical officer were reported to the Board of Education. The board of guardians when asked to relieve the children passed a resolution which was everything that could be desired but it had been reported to him that not a single child had been relieved. There would be no difficulty, without legislation, in bringing about medical examination in all the schools. All that was necessary was to put a clause in the Code to the effect that after a certain date no grant would be paid to any public elementary school unless there was a satisfactory system of medical inspection approved by the Board of Education.

Dr. C. F. HUTCHINSON contended that no child who started school work without food was in a position to benefit from the education provided for him. It was a cruelty to require such a child to study; it was as impossible for him to receive education as it would be to do physical work. He admitted the necessity for inquiries but they should do something in the meantime to prevent the physical deterioration arising from that early malnutrition which engendered a desire for stimulants and increased the number of unemployed and unemployable.

Sir WALTER FOSTER said he thought something could be done by the Board of Education to encourage a system of medical inspection in the schools. Medical relief was not held to pauperise the recipients, why should the feeding of children at school? On the recommendation of the teacher the children of destitute parents might be fed, the relief being given as medical relief was now given, on loan. The cost could be recovered from the parents where they were capable of paying.

Sir WILLIAM ANSON, in the course of his reply, said that the suggestion that the Poor-law authority in areas where distress was known to prevail should provide the meals on proper evidence and that the parents should then be charged seemed to be well worthy to be taken into consideration and he would undertake to confer with the President of the Local Government Board to see whether it was possible to organise some such method of securing that children were not left destitute and neglected by their parents in the poorer districts of the large towns. But apart from the law which dealt with neglected children how were they to meet this question of underfeeding? It could only be done by grants from the Exchequer, by raising money from the rates or by voluntary effort.

Dr. HUTCHINSON: Or by all three.

Sir WILLIAM ANSON said he would not be prepared to make any suggestion as to grants from the Exchequer; and as to the rates he thought there was great force in the observation that it would be a hardship on the poor ratepayer to provide meals for a fellow citizen one degree poorer than himself. All he could do was to undertake that as far as administration went he would see what could be done to instruct local authorities to organise voluntary efforts.

Plague in India.

Mr. HERBERT ROBERTS asked the Secretary of State for India whether he would give the latest figures as to the number of deaths from plague and small-pox in India; whether he would state the number of deaths from plague since Jan. 1st, 1905; and whether he was in a position to make a statement as to what special steps the Government of India was taking to reduce the rate of mortality and to prevent the spread of the disease.—Mr. BRODRICK said: I am unable to give figures regarding deaths from small-pox as they are not specially returned to me. For plague the latest received figures are for the month of February—namely, 126,041 deaths. The total number of deaths from plague since Jan. 1st up to the end of February is 252,567. I have been in communication with the Viceroy as to whether more can be done to remedy the present deplorable loss of life. It has been decided to send out a scientific expedition to make a thorough investigation into the origin and causes of plague. The Royal Society and the Lister Institute have undertaken the direction of the inquiry and arrangements for starting it at once have been made.

Mr. SCHWANN asked whether plague had not something to do with want of food owing to the enormous burdens placed upon the Indian people.—Mr. BRODRICK said: We have no evidence to that effect. It is almost impossible to trace any special cause for the increase in the number of deaths but there is one satisfactory feature which is that the number of infected areas has not increased.

Irish Guardians and Medical Appliances.

Mr. O'SHEE asked the Chief Secretary to the Lord Lieutenant of Ireland whether the Lismore board of guardians had by resolution requested the Local Government Board for Ireland, in view of the efforts now being made for the promotion of Irish industries and manufactures, to authorise them to entertain only tenders received from bonâ-fide Irish manufacturing firms for medicines and medical and surgical appliances; and, if so, whether the Local Government Board would give the Lismore guardians and any other public bodies desiring to follow the same principle this discretion in the case of all articles manufactured in Ireland by a number of firms sufficient to insure adequate competition; and whether he would make inquiries of the President of the Local Government Board for England to ascertain whether this principle was adopted by a considerable number of boards of guardians in England.—Mr. LONG replied: The duty of the board of guardians in the exercise of their public trust is to have due regard to economy and to obtain the best return possible for the money of the ratepayers whom they represent. The Local Government Board has no power to enlarge or to curtail the responsibility of the guardians in this respect. The English Local Government Board has no knowledge that the method suggested is adopted in this country.

Laboratory Work at Birmingham.

Mr. LEIF JONES asked the Chancellor of the Exchequer whether he was aware that the School of Brewing in connexion with the University of Birmingham had not fulfilled the expectations of its founders; that to provide against the closing of the school a professional laboratory, in competition with private analysts, was to be established for the purpose of analysing brewers' samples; that it was proposed to advertise the existence of the laboratory to the brewing trade generally; and that the local brewers, in consideration of having guaranteed a sum toward the maintenance of the school, were to have their analytical work done at the school laboratory free of cost to the extent of their respective guarantees; and whether he would take steps to prevent an institution supported partly out of public funds being thus used in competition with private professional analysts.—Mr. AUSTEN CHAMBERLAIN said: I am informed that the School of Brewing has completely fulfilled the expectations of its founders and is now in a most flourishing condition; the buildings, equipment, and annual working cost have all been provided by the Birmingham and Midland Counties Wholesale Brewers' Association, so that no part of the funds of the University or the Government grant has been used in founding or carrying on the

school. The scientific work done in the school is the subject of a complimentary reference from the gentlemen who carried out the last quinquennial inspection on behalf of the Treasury in 1901. I understand that it is now proposed to make additions to the school as a result of a visit made by a deputation from the board of management to the schools of Ghent, Berlin, Vienna, Munich, and Paris. I see no reason for any Treasury interference.

TUESDAY, MARCH 28TH.

Typhoid Fever at Malta.

Sir JOHN COLOMB asked the Secretary to the Admiralty whether during the year 1904 there were many cases of typhoid fever in His Majesty's ships resorting to Malta Harbour.—Mr. PRETYMAN replied: In H.M.S. *Venerable* there were 17 cases of typhoid fever, four ending fatally; in H.M.S. *Montagu* six cases and one death; and in H.M.S. *Arrogant* four cases and one death. As such questions and answers give rise to misapprehension I think it desirable to add that the outbreaks of typhoid fever in these ships were not due to the Malta water-supply. The disease was contracted during the visits of these ships to other Mediterranean ports.

Medical Officers of Health and Private Practice.

Mr. WEIR asked the Lord Advocate whether he would state the names of the six counties in Scotland where the medical officers of health engaged in general or consultative practice; and whether arrangements could be made for such officers to give their whole time to the duties of their office when fresh appointments were made.—The LORD ADVOCATE said: The names of the counties are Bute, Forfar, Haddington, Orkney, Shetland, and Ross and Cromarty. Since 1901 it has been a necessary condition of participation in the sanitary officers' grant that a county medical officer shall not engage in general private practice.

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.

BRISCOE, WILLIAM THOMAS, M.D., M.Ch. Dub., has been re-appointed Medical Officer of Health by the Chippenham Rural District Council.

CULMER, J. J., M.R.C.S. Eng., L.R.C.P. Lond., has been appointed Resident Surgeon Superintendent of the New Providence Asylum, Nassau, Bahamas.

CUNLIFFE, T. V., M.D., B.S. Lond., has been appointed Honorary Pathologist to the Oldham Infirmary.

DAVIS, O. C. M., B.Sc., has been appointed Lecturer on Materia Medica and Practical Pharmacy at University College, Bristol.

GARDEN, W. SIM, M.B., Ch.B., has been appointed Second Medical Officer of the County Asylum, Chester.

GRACE, ALFRED, L.S.A., has been appointed Medical Officer of the Workhouse and of the First District of the Chipping Sodbury Poor-law Union.

GRILLS, G. HAMILTON, B.Ch., M.D., has been appointed Senior Medical Officer of the Chester County Asylum, Chester.

MEADOWS, ROBERT THORNTON, M.D., C.M. Edin., D.P.H. Eng., has been appointed Medical Officer of Health to the St. Germans (Cornwall) Rural District Council.

NEILD, NEWMAN, M.B., B.Ch. Vict., L.R.C.P. Lond., M.R.C.S., has been appointed Lecturer on Pharmacology and Therapeutics at University College, Bristol.

REID, DOUGLAS A., M.D. Edin., M.R.C.S., has been re-appointed Medical Officer of Health of the Borough of Tenby.

ROWNTREE, CECIL, M.B., B.S. Lond., F.R.C.S. Eng., has been appointed Assistant in the Cancer Research Department of the Middlesex Hospital.

SHARP, HUGH CLIFFORD, M.B., B.C. Cantab., has been appointed Deputy Medical Officer of the Truro Port Sanitary Authority.

WORGER, THOMAS HEWLETT, M.R.C.S., L.S.A., has been re-appointed Medical Officer of Health by the Radstock (Somerset) Urban District Council.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

BIRKENHEAD BOROUGH HOSPITAL.—Junior Resident House Surgeon. Salary £80 and fees.

BIRKENHEAD UNION, INFIRMARY, WORKHOUSE, AND SANATORIUM.—Resident Assistant Medical Officer. Salary £120 per annum, with board, washing, and apartments.

BIRMINGHAM AND MIDLAND EYE HOSPITAL.—Resident Surgical Officer. Salary £100 per annum.

BRIGHTON THROAT AND EAR HOSPITAL, Church-street, Queen's-road.—Non-Resident House Surgeon for six months, renewable. Salary at rate of £75 per annum.

CANCER HOSPITAL, Fulham-road, S.W.—Two Assistant Surgeons.

CHARING CROSS HOSPITAL.—Anæsthetist.

CHARTHAM, KENT COUNTY ASYLUM.—Third Assistant Medical Officer, unmarried. Salary £140, with board, quarters, attendance, and washing.

CHELTENHAM GENERAL HOSPITAL.—Junior House Surgeon, unmarried. Salary £60 per annum, with board and lodging.

CHESTER, COUNTY ASYLUM.—Third Assistant Medical Officer, unmarried. Salary £160 per annum, with board, lodging, and washing.

CHESTERFIELD AND NORTH DERBYSHIRE HOSPITAL AND DISPENSARY.—Junior House Surgeon for six months. Salary £50 per year, with board, apartments, and laundress.

CITY OF LONDON HOSPITAL FOR DISEASES OF THE CHEST, Victoria-park, E.—Pathologist. Salary 100 guineas per annum.

COUNTY OF LONDON EVENING SCHOOLS.—Lecturers and Examiners in First Aid, Home Nursing, and Health. Fee one guinea per lecture or examination.

EAST LONDON HOSPITAL FOR CHILDREN AND DISPENSARY FOR WOMEN, Shadwell, E.—Medical Officer for the Casualty Department for six months, renewable. Salary at rate of £100 per annum.

EBBW VALE WORKMEN'S DOCTORS' FUND.—Hospital Surgeon and Chief Medical Attendant. Salary £500 per annum.

GARLANDS, CARLISLE, CUMBERLAND AND WESTMORLAND ASYLUM.—Junior Assistant Medical Officer. Salary £130 a year, rising to £150, with board, lodging, and washing.

GERMAN HOSPITAL, Dalston, N.E.—Honorary Assistant Physician.

GLOUCESTER, CITY AND PORT OF.—Medical Officer of Health. Salary £250 per annum.

HELLINGLY, EAST SUSSEX COUNTY ASYLUM.—Assistant Medical Officer and Pathologist. Salary £175 per annum, with board, lodging, washing, and attendance.

HEREFORDSHIRE GENERAL HOSPITAL.—House Surgeon, unmarried. Salary £100 per annum, with board, apartments, and washing.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton.—Resident House Physicians for six months. Honorarium of £25.

HULL ROYAL INFIRMARY.—Honorary Assistant Surgeon.

INGHAM INFIRMARY AND SOUTH SHIELDS AND WESTOE DISPENSARY.—Two House Surgeons. Salaries—Senior, £100; Junior, £75 per annum, each with residence, board, and washing.

IPSWICH, EAST SUFFOLK AND IPSWICH HOSPITAL.—Second House Surgeon, unmarried. Salary £80 per annum, with board, lodging, and washing.

LIVERPOOL WORKHOUSE, Brownlow-hill.—Assistant Medical Officer, unmarried. Salary £100 per annum.

MANCHESTER HOSPITAL FOR CONSUMPTION AND DISEASES OF THE THROAT AND CHEST.—Assistant Medical Officer for the new Crossley Sanatorium, Delamere Forest, Cheshire. Salary £50 per annum, with board, apartments, and laundry.

MARGATE, ROYAL SEA BATHING HOSPITAL.—Resident Surgeon, as Junior for six months and as Senior for a like period. Salary at the rate of £80 and £120 per annum respectively, with board and residence. Also Honorary Visiting Surgeon.

ROYAL DENTAL HOSPITAL OF LONDON, Leicester-square, W.C.—Junior Demonstrator of Practical Dental Surgery. Stipend £100 per annum, rising to £120.

ROYAL FREE HOSPITAL, Gray's Inn-road, W.C.—House Physician and Casualty House Surgeon for six months. Board, lodging, and washing provided. Also Female House Physician and Female House Surgeon for six months. Board, lodging, and washing provided. Also Assistant Anæsthetist for six months.

ROYAL HOSPITAL FOR DISEASES OF THE CHEST, City-road, E.C.—Clinical Assistants.

ST. HELENS, HASTINGS, FAIRLIGHT HALL CONVALESCENT HOME.—Visiting Physician (Honorary).

SEAMEN'S HOSPITAL SOCIETY, Greenwich, S.E.—Dreadnought Hospital, Greenwich: House Physician, salary £85 per annum; House Surgeon, salary £85 per annum; Junior Resident Medical Officer, salary £40 per annum. At the Branch Hospital, Royal Victoria and Albert Docks: Senior House Surgeon, salary £100 per annum; House Surgeon, salary £50 per annum. With board, residence, and washing in each case.

STAFFORD, STAFFORDSHIRE GENERAL INFIRMARY.—Honorary Ophthalmic Surgeon.

WEST BROMWICH DISTRICT HOSPITAL.—Resident Junior House Surgeon. Salary £50 per annum, with board, lodging, washing, and attendance.

WILLESDEN ISOLATION HOSPITAL.—Resident Assistant Medical Officer, unmarried. Salary £125 per annum, rising to £200 per annum, with board, washing, and lodging.

WINCHESTER, ROYAL HANTS COUNTY HOSPITAL.—House Surgeon, unmarried. Salary £65 per annum, rising to £75, with board, residence, &c.

YORK DISPENSARY.—Resident Medical Officer, unmarried. Salary £120 a year, with board, lodging, and attendance.

Births, Marriages, and Deaths.

BIRTHS.

BOWLE-EVANS.—On March 25th, at Abbottabad, India, the wife of Captain C. H. Bowle-Evans, I.M.S., of a daughter.

FAWSSETT.—On March 23rd, at Fore-street, Edmonton, N., the wife of Frank W. Fawssett, M.B., of a daughter.

FIELDING.—On March 21st, at Aberfoyle, Avondale-road, Croydon, the wife of A. Leslie Fielding, L.R.C.P. & S. Edin., L.F.P. & S. Glasg., of a daughter.

KENNEDY.—On March 22nd, at Balaam-street, Plaistow, E., the wife of Angus Endicott Kennedy, M.R.C.S., L.R.C.P., of a son.

PARSONS.—On March 21st, at The Cottage, Shipton-under-Wychwood, Oxford, the wife of John E. H. Parsons, B.A. Cantab., M.R.C.S. Eng., L.R.C.P. Lond., of a daughter.

MARRIAGE.

HODGSON—REED.—On March 25th, at Christ Church, Streatham, Stanley Hodgson, M.D., B.S. Lond., M.R.C.S., L.R.C.P., to Lucie, youngest daughter of the late James Reed, Adelaide, South Australia.

DEATHS

BADCOCK.—On March 26th, at Buckingham-place, Brighton, Lewis Carter Badcock, M.D., aged 65 years.

CUFAUDE.—On March 23rd, at 7, Daysbrook-road, Streatham-hill, S.W., Frank Cufaude, L.R.C.P. Edin., M.R.C.S Eng., late of Acle, Norfolk, aged 57.

MACKINNON.—On March 24th, at Weybridge, Surrey, Lieutenant-Colonel H. W. A. Mackinnon, D.S.O., A.M.S., retired, aged 63 years.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

THE OPHTHALMIC OPTICIAN.

A CORRESPONDENT has forwarded to us a card which was dropped into his letter box. The card emanates from a firm of opticians named Robinson and Co. who live in Bishopsgate and Messrs. Robinson keep an "optologist" who bears the singularly inappropriate name, for one who deals with the sight, of Moles. Mr. Moles states that he holds diplomas by examination from the British Optical Association and from the Worshipful Company of Spectacle Makers. Messrs. Robinson profess, we presume through Mr. Moles, to relieve various errors of refraction and also sore eyes or watery eyes. They say: "Our system of sight testing is thorough and we can detect the cause of the eye trouble or the slightest defect of vision." Though it may be that an "optologist" can detect and even relieve simple cases of errors of refraction, there are many cases of eye trouble which are dependent upon other causes, and Messrs. Robinson and Moles are quite capable of doing irreparable damage by preventing persons affected by, say, glaucoma in an early stage, from seeking proper medical advice. They would be well advised to stick to their proper occupation of making optical instruments.

THE LORD OF THE MANOR'S HERIOT AT AN INQUEST.

To the Editors of THE LANCET.

SIRS,—On reading some old letters from an ancestor of mine I came across a curious circumstance in connexion with an inquest which is interesting, although no doubt familiar to those acquainted with the history of legal matters. One dated April 20th, 1794, from a father in Westmorland to a son in London, relates how "Your brother Joseph rec'd a blow last Tuesday over his bowels by one of his own Horses, and being in excrutiating pain till Sunday morning, at Eight o'clock, he then expired. We had two doctors to attend him but all in vain. ....." The next, dated May 4th, 1794, relates "In my last I gave an account of your Bro' death; which was the same day I wrote unto you. It was attended with very unpleasing circumstances which I shall relate as follows. Sunday morning near Eight o'clock he Died, on Monday we had a report that the Coroner would take an Inquest on the Body, which accordingly on Tuesday (that being the day of his Burial) he, together with the Jury, did the same. They then brought in the Stagg to be a forfiture due to Lord Lonsdale, but the Jury brought in the unlucky Beast in Value as low as Three pounds, thinking that sum would be a compencation to his Lordship: but, alas! it proved altogether abortive, for the next day, being Wednesday, early in the morning. A. Metcalf, being his Baylif, came and made a demand of the stagg which we imediately deliver'd up. I then was resolved to write a letter to his Lordship Last Monday Morning. I sent the letter with your Bro. John and Cousin Thos. Scarborough; they waited for an Answer from his Lordship till Wednesday at Twelve o'clock at night: when to their great surprise his Answer was that If they pleas'd they might take the stagg again by giving him the small trifle of Two guineas, and seemed quite happy if he could please his friends with such a small favour, as he called it ....." Apparently it was the custom in those times in cases of inquests for the relatives to pay a forfeit to the lord of the manor. *The* stag is written as if that were the special penalty where such was available.

I am, Sirs, yours faithfully,

City-road, E.C., March 20th, 1905. J. J. UDALE.

*** "The stag" was chosen as a heriot in this case probably because no more valuable animal was available, unless the whole proceeding depended on some local legal formality of which we have no record.—ED. L.

DOVER AS A HEALTH RESORT.

To the Editors of THE LANCET.

SIRS,—Could any of your readers give me any information about Dover as a health resort? Could they also inform me whether the medical officer of health issues a yearly statement of the health and statistics of the borough of Dover; if so, where it is to be had; the source of the water-supply and the rainfall, and whether it is a desirable place residentially. I have endeavoured to get the medical officer of health's report but have failed so far.

I am, Sirs, yours faithfully,

March 28th, 1905. PADDINGTON.

FIREMEN'S SMOKE HELMETS.

IN its engineering supplement the *Times* of March 29th mentions that the Manchester Fire Brigade is now in possession of a few specimens of a new "smoke outfit," which it is expected will be very useful to the firemen when working in presence of dense smoke or noxious fumes. A helmet having a glass door in front is fastened round the neck by means of a cloth attachment and when the door is closed the dangerous atmosphere is effectually excluded from the fireman's head and face. A flexible metal tube supplies him with air which is pumped from a special steam engine. Electricity is also supplied for a telephone fixed in the helmet to enable its wearer to communicate with the outside and for the electric lights which the fireman equipped with the outfit will carry.

FLANNELETTE.

To the Editors of THE LANCET.

SIRS,—I must apologise to "A Surgeon" for not having immediately replied to his letter of Feb. 25th but the fact is I managed somehow to overlook it and only to-day, in turning over the back numbers, have I come upon his short but very interesting note. If he (or anyone else interested in the matter) will send his address to the patentees of "Non-Flam" (Aytoun-street, Manchester) they will be happy to give him information as to where he can obtain the cheaper makes of their non-inflammable flannelette and also to answer any other inquiries which he may make about it.—I am, Sirs, yours faithfully,

Castleton, Lancs., March 27th, 1905. S. BRADBURY.

SANATORIUMS.

To the Editors of THE LANCET.

SIRS,—I should be glad if any of your readers would be good enough to inform me if it be possible to obtain a complete list of sanatoriums in this country for the treatment of phthisis.

I am, Sirs, yours faithfully,

March 27th, 1905. D.P.H.

L.R.C.P.—We think from what our correspondent tells us that the General Medical Council might well have taken notice of the unprofessional procedure. There is, we fear, no other tribunal before which the offender can be brought.

H. H. Toronto.—The condition is a common one. Our correspondent should consult a medical man.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

Medical Diary for the ensuing Week.

OPERATIONS.

METROPOLITAN HOSPITALS.

MONDAY (3rd).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), St. George's (2 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), City Orthopædic (4 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Royal Free (2 P.M.), Guy's (1.30 P.M.).

TUESDAY (4th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London (2.30 P.M.), University College (2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Royal Ear (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Soho-square (2 P.M.), Chelsea (2 P.M.), Central London Throat and Ear (2 P.M.).

WEDNESDAY (5th).—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.) Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), King's College (2 P.M.), St. George's (Ophthalmic, 1 P.M.), St. Mary's (2 P.M.), National Orthopædic (10 A.M.), St. Peter's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Gt. Ormond-street (9.30 A.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Cancer (2 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Ear (2 P.M.), Royal Orthopædic (3 P.M.).

THURSDAY (6th).—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), University College (2 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Gt. Northern Central (Gynæcological, 2.30 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), St. Mark's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Orthopædic (9 A.M.).

FRIDAY (7th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M.), Ophthalmic (10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), City Orthopædic (2.30 P.M.), Soho-square (2 P.M.), Central London Throat and Ear (2 P.M.), Royal Ear (10 A.M.).

SATURDAY (8th).—Royal Free (9 A.M.), London (2 P.M.), Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), University College (9.15 A.M.), Charing Cross (2 P.M.), St. George's (1 P.M.), St. Mary's (10 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.).

At the Royal Eye Hospital (2 P.M.), the Royal London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic Hospitals operations are performed daily.

SOCIETIES.

TUESDAY (4th).—PATHOLOGICAL SOCIETY OF LONDON (20, Hanover-square, W.).—8.30 P.M. Dr. S. G. Scott: Acute Atrophy of Liver.—Mr. S. G. Shattock: Prehistoric Vesical Calculus.—Dr. I. Caito: Imperforate Ileocolic Valve.—Dr. C. E. Adams: Carcinoma of Adrenal.—Dr. F. H. Thiele: Osteoplastic Carcinoma in Bones.—Dr. R. Michels and Dr. P. Weber: Obliterative Arteritis in the Prime of Life.

WEDNESDAY (5th).—OBSTETRICAL SOCIETY OF LONDON (20, Hanover-square, W.).—8 P.M. Specimens will be shown by Dr. A. H. N. Lewers, Dr. H. R. Andrews, and Dr. Boxall. Short Communication:—Mr. J. H. Targett: Hysterectomy for Severe Concealed Accidental Hæmorrhage. Paper and Epidiascope Demonstration:—Dr. C. Lockyer: The Development and Retrogression of the Corpus Luteum, with special reference to the Compound Lutein Cystomata found in Association with Vesicular Mole and Chorio-epithelioma.

THURSDAY (6th).—CHILDHOOD SOCIETY AND THE BRITISH CHILD-STUDY ASSOCIATION (Parkes Museum, Margaret-street, W.).—8 P.M. Lecture:—Dr. A. Rabagliati (Bradford): The Health of Children *qua* Food and Management. (Arranged by the British Child-Study Association.)

RÖNTGEN SOCIETY (20, Hanover-square, W.).—8.15 P.M. Exhibition of Novel Apparatus.

NORTH-EAST LONDON CLINICAL SOCIETY (Tottenham Hospital, N.).—4 P.M. Clinical Cases.

FRIDAY (7th).—LARYNGOLOGICAL SOCIETY OF LONDON (20, Hanover-square, W.).—5 P.M. Cases will be shown by Mr. Tilley, Mr. Pegler, Mr. Robinson, Mr. de Santi, and others.

WEST KENT MEDICO-CHIRURGICAL SOCIETY (Royal Kent Dispensary, Greenwich-road, S.E.). 8.45 P.M. Discussion on Radio-therapeutics (opened by Dr. F. H. Low).

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

MONDAY (3rd).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Dr. J. M. H. Macleod: Clinique. (Skin.) 5.15 P.M. Mr. W. R. Miles: Rectal Diseases.

TUESDAY (4th).—ROYAL COLLEGE OF PHYSICIANS OF LONDON (Pall Mall East).—5 P.M. Dr. W. H. Allchin: Some Aspects of Malnutrition. (Lumleian Lecture.)

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Dr. G. Rankin: Clinique. (Medical.) 5.15 P.M. Dr. L. Smith: Some Clinical Aspects of Nephritis.

WEDNESDAY (5th).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Mr. R. Harrison: Clinique. (Surgical.) 5.15 P.M. Mr. H. L. Barnard: Gastric Surgery.

WESTERN OPHTHALMIC HOSPITAL (153, Marylebone-road, W.).—3 P.M. Clinical Cases.

CENTRAL LONDON THROAT AND EAR HOSPITAL (Gray's Inn-road, W.C.).—5 P.M. Demonstration: Dr. D. Grant: Larynx.

THURSDAY (6th).—ROYAL COLLEGE OF PHYSICIANS OF LONDON (Pall Mall East).—5 P.M. Dr. L. E. Hill: The Influence of Atmospheric Pressure on Man. (Oliver-Sharpey Lecture).

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Mr. Hutchinson: Clinique. (Surgical.) 5.15 P.M. Sir Patrick Manson: Some Recent Advances in Tropical Pathology.

MOUNT VERNON HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST (7, Fitzroy-square, W.).—5 P.M. Lecture:—Mr. F. L. Dodd: Dental Conditions in Pulmonary Tuberculosis. (Post-Graduate Course.)

FRIDAY (7th).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Mr. M. Yearsley: Clinique. (Ear.)

SATURDAY (8th).—ROYAL SANITARY INSTITUTE (Civil-court, Small-street, Bristol).—11 A.M. Provincial Sessional Meeting. Discussion on Isolation Hospitals (opened by Dr. D. S. Davies and Mr. T. H. Yabbicom). Dr. C. Wintle, Dr. H. J. Alford, Dr. F. T. Bond, Mr. H. Jones, Dr. J. Howard-Jones, Dr. J. M. Martin, Mr. R. Read, Mr. J. T. Thomas, Dr. E. Walford, and Mr. W. Williams will take part in the discussion. General discussion is invited.

EDITORIAL NOTICES.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITORS," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention be given to this notice.

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Lectures, original articles, and reports should be written on one side of the paper only, AND WHEN ACCOMPANIED BY BLOCKS IT IS REQUESTED THAT THE NAME OF THE AUTHOR, AND IF POSSIBLE OF THE ARTICLE, SHOULD BE WRITTEN ON THE BLOCKS TO FACILITATE IDENTIFICATION.

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Letters relating to the publication, sale and advertising departments of THE LANCET *should be addressed "To the Manager."*

We cannot undertake to return MSS. not used.

MANAGER'S NOTICES.

THE INDEX TO THE LANCET.

THE Index to Vol. II. of 1904, which was completed with the issue of Dec. 31st, and the Title-page to the Volume, were given in THE LANCET of Jan. 7th.

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(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, Mar. 30th, 1905.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radia in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks at 8.30 A.M.
Mar. 24	29·69	N.W.	0·05	90	57	45	46	47	Overcast
,, 25	29·85	SSW	...	71	54	42	45	46	Overcast
,, 26	29·85	W.	0·07	101	57	46	45	47	Fine
,, 27	29·70	S.W.	0·02	55	49	42	43	44	Raining
,, 28	29·92	W.	0·04	95	58	41	45	46	Fine
,, 29	29·88	W.	...	79	57	46	48	51	Cloudy
,, 30	29·84	S.W.	0·07	88	56	48	49	50	Cloudy

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